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No. 122

In the Supreme Court of the United States

OCTOBER TERM, 1929

FEDERAL RADIO COMMISSION, PETITIONER

v.

GENERAL ELECTRIC COMPANY AND PEOPLE OF THE STATE OF NEW YORK

ON WRIT OF CERTIORARI TO THE COURT OF APPEALS OF THE DISTRICT OF COLUMBIA

BRIEF FOR PETITIONER

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OPINION BELOW

The opinion of the Court of Appeals of the District of Columbia is reported in 31 F. (2d) 630. (R. 386.)

THE STATUTES

The statutes involved are the Radio Act of 1927 (44 Stat. 1162), the Amendatory Act of March 28, 1928 (45 Stat. 373), and the Amendatory Act of March 4, 1929 (45 Stat. 1559). These statutes are set out in Appendices A, B, and C, pages 113, 143, and 145 of this brief.

JURISDICTION

I

THE PROCEEDINGS

The judgment of the Court of Appeals was entered February 25, 1929 (rehearing denied March 9, 1929), in three causes numbered and entitled on the docket of that court as follows: No. 4870, *General Electric Company, Appellant,* v. *Federal Radio Commission;* No. 4871, *The People of the State of New York, Appellants,* v. *Federal Radio Commission;* and No. 4880, *General Electric Company, Appellant,* v. *Federal Radio Commission.* (R. 392, 393.)

These three causes were appeals from a single decision of the Commission made and entered October 12, 1928, relating to an application for renewal of license by General Electric Company, a New York Corporation, to operate its broadcasting station, WGY, at Schenectady, New York. The three causes were heard and treated as one cause by the Court of Appeals, on a consolidated record, and the one judgment above mentioned was entered as that court's judgment in all three causes.

Petition for writ of certiorari was filed June 1, 1929, and was granted October 14, 1929. (R. 395.) The jurisdiction of this Court rests on Section 240 (a) of the Judicial Code as amended by Act of February 13, 1925. (43 Stat. 938.)

II

THE COURT OF APPEALS IS A JUDICIAL TRIBUNAL UNDER SECTION 16 OF THE RADIO ACT OF 1927

The power of the Court of Appeals to review a decision of the Commission is derived from Section 16 of the Radio Act of 1927. (Appendix A, p. 129.) The court is empowered to hear, review, and determine an appeal upon the record and evidence, and it may alter or revise the decision appealed from and enter such judgment as to it may seem just. The revision by the court must be confined to the points set forth in the reasons of appeal, but the court is permitted, upon the petition of either party, to order the taking of additional evidence in such manner and upon such terms and conditions as it may deem proper.

The Commission believes the Court of Appeals exercises a form of judicial review under Section 16, and it has contended from the beginning that no administrative or legislative authority is conferred on that court by the Radio Act of 1927, as amended. The Commission therefore submits the Supreme Court has jurisdiction on writ of certiorari to consider and to reverse or affirm or modify any judgment of the Court of Appeals relating to any decision of the Commission. It is the Commission's position that decisions of this court in such cases as *Keller at al.* v. *Potomac Electric Power Company et al.*, 261 U. S. 428, and *Postum Cereal Company* v. *California Fig Nut Company*, 272 U.

S. 693, are inapplicable in this situation—cases upon the authority of which the Court of Appeals denied a stay of its mandate upon the application to this Court for writ of certiorari. (R. 394.)

The Commission believes Section 16 permits the Court of Appeals "to consider all relevant questions of constitutional power or right and all pertinent questions whether the administrative order is within the statutory authority, or is an attempted exercise of it so unreasonable as not to be within it; but these are questions of law only. *Interstate Commerce Commission* v. *Illinois Central R. R. Co.*, 215 U. S. 452, 470. Of course the consideration and decision of questions of law may involve a consideration of controverted facts to determine what the question of law is, but it is settled that any finding of facts by the Commission if supported by evidence is final and conclusive on the courts. *Interstate Commerce Commission* v. *Union Pacific R. R. Co.*, 222 U. S. 541, 547." (Opinion of Mr. Chief Justice Taft in *Keller et al.* v. *Potomac Electric Power Company et al.*, 261 U. S. 428, 442.) See also *People of the State of New York ex rel. New York and Queens Gas Company* v. *McCall et al.*, 245 U. S. 345.

The mere fact the Court of Appeals has been invested with supervision over the Commission's decisions, as distinguished from District Courts or Circuit Courts of Appeals, does not necessitate the conclusion it was intended to give the Court of Appeals administrative or legislative powers. See

Federal Trade Commission v. *Klesner*, 274 U. S. 145; *Old Colony Trust Company et al.* v. *Commissioner of Internal Revenue*, 279 U. S. 716, 722.

Section 16 provides an appeal to the Court of Appeals from a decision of the Commission refusing an application for construction permit, for station license, or for the renewal or modification of station license; it also allows an appeal from a decision of revocation of license to District Courts of the United States as well as to the Court of Appeals. Whether an appeal is taken to the Court of Appeals from a decision refusing an application, or to a District Court from a decision of revocation, the procedure is exactly the same, including the provision for additional evidence and the scope of the judgment which may be entered by the appellate tribunal. Congress must have acted with reference to the law established in *Keller et al.* v. *Potomac Electric Power Company et al., supra,* and *Ex Parte Bakelite Corporation*, 279 U. S. 438; for it is manifestly impossible to confer administrative or legislative powers on a District Court. If section 16 is open to a construction consistent with the Constitution, that construction must be followed.

In its decisions and regulations the Commission is governed by the statutory standard of public interest, convenience, and necessity, and it is inconceivable Congress intended such decisions or regulations should be subject to administrative or legislative revision by the Court of Appeals. In creating a body of experts, equipped with special facili-

ties and knowledge to collect and apply the relevant facts with reference to the statutory standard, Congress must have intended the rulings of the Commission should be binding, unless, as a matter of law, such rulings are arbitrary or mistaken. See *Federal Trade Commission* v. *Gratz et al.*, 253 U. S. 421; *Federal Trade Commission* v. *Curtis Publishing Company*, 260 U. S. 568.

There is a striking parallelism between the powers conferred on the Court of Appeals by Section 16 and the powers of Circuit Courts of Appeals under Section 5 of the Federal Trade Commission Act (38 Stat. 717). As stated in *Federal Trade Commission* v. *Curtis Publishing Company*, 260 U. S. 568, 580, the language of the statute is broad, including provisions for taking additional testimony and giving the Circuit Courts of Appeals power to affirm, modify, or set aside the orders of the Commission, and yet the Act confers no administrative or legislative authority on the reviewing tribunal. *Federal Trade Commission* v. *Eastman Kodak Company et al.*, 274 U. S. 619.

District Courts are invested with similar powers under the National Prohibition Act (41 Stat. 305). *Ma-King Products Company* v. *Blair*, 271 U. S. 479; *Smith et al.* v. *Foster et al.*, 15 F. (2d) 115 (D. C., S. D. N. Y., 1926).

The patent cases, e. g., *United States* v. *Duell*, 172 U. S. 576, and *Butterworth* v. *U. S. ex rel. Hoe et al.*, 112 U. S. 50, are not germane; for they involve appellate provisions dissimilar to Section 16.

In drafting Section 16, it is evident Congress followed to some extent the statute involved in the patent cases, namely, the Act of July 8, 1870, permitting an appeal to the Supreme Court of the District of Columbia from decisions of the Commissioner of Patents. But there is an important difference in language. The Act of July 8, 1870 (16 Stat. 205), provides:

> * * * And after hearing the case, the court shall return to the commissioner a certificate of its proceedings and decision, which shall be entered of record in the patent office, and govern the further proceedings in the case. But no opinion or decision of the court in any such case shall preclude any person interested from the right to contest the validity of such patent in any court wherein the same may be called in question.

It is clear from the foregoing the appeal thus given from the decisions of the Commissioner of Patents is merely one step in the statutory proceedings under the patent laws whereby that tribunal is interposed in aid of the Patent Office, though not subject to it. *Butterworth* v. *U. S. ex rel. Hoe et al.*, 112 U. S. 50, 60.

III

THE COURT OF APPEALS ACTED IN A JUDICIAL CAPACITY IN THESE CAUSES

It is apparent the Court of Appeals proceeded on the assumption it is an administrative tribunal,

for the language of the opinion is carefully chosen to indicate its decision is confined to error of the Commission in applying the statutory standard of public interest, convenience, or necessity to the facts before it. (R. 386.) The discussion under the heading "Statement" (Brief, p. 9) will show the Court of Appeals, in the first instance, without recourse to the evidence before the Commission (for there was no hearing and no evidence), undertook to apply the statutory standard on the basis of the facts and considerations submitted for the first time on the appeals.

Because General Electric Company violated fundamental regulations of the Commission it was denied a hearing; there was no finding by the Commission that operation of WGY would not serve the public interest. The Court of Appeals, in accepting and deciding the appeals with reference to the statutory standard, necessarily invalidated the Commission's regulations relating to its allocation of broadcasting facilities and its procedure. Such regulations have the force of law. *United States* v. *Eaton,* 144 U. S. 677; *United States* v. *Grimaud,* 220 U. S. 506. Holding regulations of the Commission invalid is an exercise of a judicial function. *United States ex rel. Steinmetz* v. *Allen,* 192 U. S. 543; *Smoot* v. *Heyl,* 227 U. S. 518; *United States* v. *Antikamnia Chemical Company,* 231 U. S. 654.

Moreover, the Court of Appeals assessed costs against the Commission. (R. 393.) That a judgment for costs is a judicial function based on ex-

press statutory authority, see *Tesla Electric Co.* v. *Scott et al.*, 101 Fed. 524 (C. C., E. D. P., 1900).

On November 9, 1929, acting presumably under Section 11 of the Act of February 9, 1893 (27 Stat. 436), creating the Court of Appeals, a remedial prerogative writ was issued staying the action of the Commission pending a determination of the first two appeals, Nos. 4870 and 4871. (R. 380.) That a prerogative writ in aid of appellate jurisdiction is a judicial function, see *In Re McFarland,* 30 App. D. C. 365, 390.

STATEMENT

(An explanation of the technical terms and considerations is contained in Appendix D, Brief, p. 146. See also R. 343–363 for a more detailed statement of certain scientific considerations.)

General Electric Company, a New York Corporation, owns and operates broadcasting stations WGY, at Schenectady, New York, KGO, at Oakland, California, and KOA, at Denver, Colorado. Prior to February 23, 1927, these stations were operated under licenses from the Secretary of Commerce issued under the Radio Act of 1912 (Act of August 13, 1912, c. 287, 37 Stat. 302). After February 23, 1927, said stations were operated under successive licenses from the Federal Radio Commission.

For several years prior to November 1, 1927, the Company operated WGY under licenses authorizing the use of the frequency of 790 kc. on a division of time with Station WHAZ, a station at Troy, New York. The power utilized by WGY had

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varied, but shortly before November 1, 1927, it was authorized to use 50 kw. On November 1, 1927, a license was issued permitting full time operation on 790 kc. with power of 50 kw. for the period from November 1, 1927, to December 31, 1927. This license was extended by successive orders of the Commission for short periods of time (never more than 60 days) until November 11, 1928, when it finally expired. On January 14, 1928, the Company filed an application for renewal of its license. (R. 90-95.)

On August 30, 1928, the Commission adopted certain regulations and embodied them in its General Order 40. (R. 100–103.) By this order the Commission recognized the existing practice by setting aside and assigning the band of frequencies between 550 and 1500 kc. for the use of broadcasting stations and prescribed a separation of 10 kc. between the frequencies used within said band by broadcasting stations. It designated 6 of the total of 96 channels thus created for exclusive use by Canadian stations and 11 more of said channels for shared use by Canadian stations and stations in the United States with restrictions on the power to be used on such channels. It furthermore classified the 90 channels (exclusive of the 6 channels reserved for Canadian use) into various classes with restrictions as to the number of stations which might operate simultaneously on any particular channel and the power that might be used on each

class of channel. 40 specific channels were designated as what are popularly known as "cleared channels" with the provision that only one station would be permitted to operate on any such channel at any time during night hours. (R. 104). These 40 cleared channels were allocated equally among the five zones into which the country is divided by Section 2 of the Radio Act of 1927, 8 specific channels to each zone. The frequency of 790 kc. was designated as a cleared channel and assigned to the Fifth Zone.

Thereafter the Commission prepared an allocation of all existing broadcasting stations (approximately 650 in number) in accordance with General Order 40, specifying the frequency, power, and hours of operation to be designated for use by such stations during the license period beginning November 11, 1928. This allocation was tentatively approved September 8, 1928, at a regular meeting of the Commission. (R. 105–108.) At the same time the Commission adopted a course of procedure which, among other things, provided a method for dissatisfied stations to seek modification of their respective assignments and for hearings on request.

The tentative designation of facilities for use by WGY was as follows: frequency, 790 kc.; power, 50 kw.; hours of operation, "limited." The tentative designation for KGO, at Oakland, California, another station of General Electric Company, was as follows: frequency, 790 kc.; power, 10 kw.; hours of operation, unlimited. No other station was as-

signed to said frequency. The meaning of the term "limited" had not then been crystallized in formal regulations, although its meaning was conveyed to and understood by General Electric Company. Its meaning was crystallized in a formal regulation in the Commission's General Order 48, adopted October 24, 1928, together with its General Order 41, adopted September 4, 1928. (R. 109–110, 111–112.) As applied to WGY the term "limited" meant it would not be permitted to operate after sunset at Oakland, California, except with consent of KGO to a curtailment of time. As hereinafter explained, this would have permitted WGY to operate daily all day and up to 10.00 p. m. (and during 3 months of the year even later) or condition only that KGO close down for an average of 51 minutes daily before 7.00 p. m.

On September 11, 1928, the Commission sent all broadcasting stations, including WGY, a copy of the tentative allocation of September 8, 1928, together with a statement incorporating and explaining the procedure to be followed by dissatisfied stations desiring a modification of assignment. (R. 112–114.) Among other things, the prescribed procedure called for the filing of an application specifying what frequency, power, and hours of operation were desired by the applicant and specifying that—

> no application will be entertained which fails to comply with this requirement.

Provision was made for notice to all other broadcasting stations directly interested and a hearing on the application.

On September 15, 1928, General Electric Company asked for the forms to be used in making such application, and on September 19, 1928, the Commission sent such forms to it. Representatives of the Commission and the Company engaged in verbal conferences and exchange of letters. (R. 116–125.) On October 5, 1928, the Company filed an application for modification of its assignment. (R. 125–129.) Instead of requesting one of the 8 cleared channels available for use in evening operation by stations of the First Zone, the Company asked for full time on the frequency of 790 kc. and, in addition, asked for power of 150 kw., which was 100 kw. in excess of the maximum permitted under the regulations of the Commission incorporated in its General Order 42. (R. 110–111.) At a regular meeting held October 12, 1928, the Commission denied said application on the ground it was inconsistent with General Order 40. (R. 161.) On October 13 or 14, 1928, the Company received informal notice of this decision, and on October 17, 1928, formal notice was sent. (R. 161.)

On October 12, 1928, at a regular meeting of the Commission, the Commission again considered the allocation, which had been revised in certain respects not material to WGY or KGO or the frequency of 790 kc. After approving said revised

allocation, the Commission proceeded to consider the applications for renewal pending before it, including the application filed January 14, 1928, by General Electric Company with respect to WGY. The Commission took the following action with reference to said application for renewal:

> 1. That to each broadcasting station listed in said revised allocation which has an application for renewal of its license pending before the Commission, a renewal license be issued for the frequency, power, and hours of operation indicated in said revised allocation. * * *
>
> 4. That each license or renewal license issued under the foregoing directions be so worded as to take effect on November 11th at the hour of three o'clock a. m., Eastern Standard Time, and to terminate on January 31, 1929, at the hour of three o'clock a. m., Eastern Standard Time.

The revised allocation with reference to which the Commission made the foregoing decision is set forth in full in the record. (R. 134–160.) With regard to WGY it indicated it would be authorized to use 790 kc. with power of 50 kw. on a "limited" time basis. With regard to KGO it indicated it would be authorized to use 790 kc. with power of 10 kw. on a full time basis. On October 17, 1928, pursuant to said decision, the Commission issued a license to General Electric Company for operation

of WGY. (R. 188–189.) Among other things it purports to cover—

> the term beginning at 3.00 a. m. November 11, 1928, and ending 3.00 a. m. January 31, 1929, Eastern Standard Time;

and further provides—

> The authorized frequency or wave length, maximum power, call letters, and time of operation are as follows:
>
> Frequency, 790 kc. * * * power output, 25,000 watts and 25,000 additional watts on experimental basis; * * * time of operation, limited.

In the meantime, through verbal negotiations and correspondence passing between General Electric Company and the Commission, it had been made clear that with respect to hours of operation WGY might, under its new assignment, operate throughout all daylight hours and every evening up until 10.00 p. m., on condition only that Station KGO cease operation between sunset at Oakland, California, and 7.00 p. m. during those months when sunset at Oakland, California, occurs prior to 7.00 p. m., an average daily curtailment throughout the year of 51 minutes. A majority of the Commission bound itself to approve this arrangement in a letter mailed to the Company September 25, 1928 (R. 117–119) and confirmed by other correspondence set forth in the record (R. 119–124). During the period between October 18 and October 31, 1928,

correspondence passed back and forth between the Company and the Commission (R. 164–188) in which the reasons for the Commission's action of October 12, 1928, were explained in detail by the Commission, as they had previously been explained verbally, and the Company was advised that—

> * * * there is no difficulty in the way of obtaining a hearing, provided you file a new application which is in compliance with the very reasonable requirements made by the Commission. * * *
>
> To obtain a hearing all you have to do is file a new application specifying a channel which is available to the first zone, and an amount of power which is permitted under General Order 42. (R. 164, 165.)

The Company at all times failed and refused to file such an application.

On October 23, 1928, General Electric Company, in spite of the fact that it had previously applied for renewal of its license on January 14, 1928, and said application had been enacted upon by the Commission on October 12, 1928, filed another "application for renewal" of said license. (R. 206–216.) In this application it again requested 790 kc. or—

> an equivalent frequency which will enable it to continue the service which it has rendered in the past. The General Electric Company will also accept a power assignment equal to the maximum allowed any other station. (R. 213.)

To this application the Company attached a large number of documents, letters, and affidavits, part of which in condensed form are set forth in the record. (R. 216–269.) Upon receipt of this application the Commission wrote a letter to the Company October 24, 1928 (R. 169–171) in which it was explained that the previous application had already been acted upon and also the following:

> I assume that what you really desire is a modification of your new frequency assignment under the allocation recently announced. * * * If you will file an application for modification specifying a frequency which has been assigned to the First Zone (assuming that you desire full time on a cleared channel), the Commission will entertain the application and grant you a hearing. * * * (R. 170–171.)

On the same day the People of the State of New York made an application to be heard with regard to WGY. The Commission answered said application October 25, 1928. (R. 172–181.)

On November 3, 1928, General Electric Company filed with the District Supervisor of Radio of the Department of Commerce in New York City a further application, this time on the form prescribed by the Commission for modification. (R. 270–281.) This application was received by the Commission November 5, 1928. In this application

the Company requested full-time operation on the frequency of—

> 790 kcs. or any frequency substantially equivalent to enable continuance of WGY's public service—

with 25,000 watts power and 25,000 watts additional on an experimental basis. (R. 271.) The application was accompanied by a letter from the Company, requesting a hearing on the application on either November 7 or 8, 1928. (R. 270.) Under the Commission's regulations governing the date of hearings, which regulations are set forth in General Order 37, adopted on August 22, 1928 (R. 98–99) and which were well known to General Electric Company, a hearing could not be held earlier than the expiration of a period of twenty days in order to permit other interested stations to be notified. Furthermore, this last application again defied the Commission's regulations by failing to specify a cleared channel available to stations in the First Zone.

Prior to any action by the Commission on either the application of October 23, 1928, or the application of November 3, 1928, General Electric Company filed with the Court of Appeals a notice of appeal in cause No. 4870, *General Electric Company, Applicant-Appellant,* v. *Federal Radio Commission,* which notice of appeal was as follows:

> Now comes the General Electric Company, applicant-appellant in the above-entitled pro-

> ceeding, and says that it is aggrieved by the decision of the Federal Radio Commission rendered herein against it on October 17, 1928, effective October 17, 1928, and gives notice of its appeal therefrom to the Court of Appeals of the District of Columbia, and assigns in support thereof the reasons for appeal hereinafter set forth.

To its notice of appeal the Company attached a long document entitled "Reasons for Appeal," the first three paragraphs only of which purported to state reasons for the appeal and the rest of which was devoted to "Facts and Proceedings which caused this Appeal." (R. 1–10.) Said document was executed and sworn to by one of the attorneys of record for the Company, and incorporated by reference a large number of documents, affidavits, and letters, including the several applications which General Electric Company had made to the Commission and the many letters and affidavits which accompanied its so-called "Application for Renewal" of October 23, 1928. The reasons for appeal alleged were in substance that the Commission had

> threatened to deprive the General Electric Company of its property right to use broadcasting facilities of Station WGY in full-time operation on a frequency of 790 kilocycles, or any frequency substantially equivalent;

also that the Commission had failed to serve public interest, convenience, or necessity

> in refusing to authorize continuance of the public service heretofore rendered by WGY;

had failed

> to afford General Electric Company an opportunity to be heard under reasonable rules and regulations with respect to its applications for continuance of broadcasting service;

and had

> otherwise failed to comply with the provisions of the Radio Act of February 23, 1927.

Said document also alleged with regard to General Order 40 that—

> The Commission has failed to provide a sufficient number of unlimited frequencies or channels. It has allocated forty such frequencies throughout the United States, eight frequencies for each of the five zones. At least fifty such frequencies should have been provided, etc. (R. 7.)

On the same day the People of the State of New York filed a notice of appeal in cause No. 4871, *The People of the State of New York, Appellants* v. *Federal Radio Commission,* accompanied by "Reasons for Appeal." (R. 10–13.) On the same day, November 9, 1928, the Court of Appeals, on motion of General Electric Company, entered an

order described as a "stay order" requiring the Commission to allow Station WGY to continue to operate with full time on 790 kc. during the pendency of the appeal. (R. 380.) The Court of Appeals likewise on the same day set the causes for oral argument on December 3, 1928.

On November 13, 1928, the Court of Appeals advised the Commission that because of matters then pending before it and an adjournment which the court was about to take, it would not be possible for that court to hear any motions which the Commission was planning to make with regard to said appeals and said stay order until the date set for oral argument on December 3, 1928, but that the Commission might file its motions in writing and the statement and record required of it by Section 16 of the Radio Act of 1927 without waiving any right it might have with respect to any of said motions.

On November 27, 1928, the Commission filed a written motion to dismiss the appeal in cause No. 4870 (R. 364–367), assigning, among other grounds, that the notice of appeal and of the reasons therefor was not filed within twenty days after the decision complained of was effective; that it did not appear from the document what decision was complained of, nor the nature of such decision, nor that it was an appealable decision under Section 16 of the Radio Act of 1927, and other reasons. The Commission likewise on the same day filed a writ-

ten motion in said cause to strike the notice of appeal and reasons therefor, and particularly that portion of the document following the first three paragraphs after the heading "Reasons for Appeal" (R. 368–370), assigning as grounds therefor that the portions specified were in the nature of evidence, did not constitute matters which the Commission was required to file in its record, and might be adduced only by verified petition and order of court, as provided in Section 16 of the Act. The Commission likewise on the same day filed a written motion in said cause to vacate the "stay order" of November 9, 1928 (R. 370–372), assigning as grounds, among others, that the Commission's decision was not susceptible or subject to a stay order, that the stay order was in effect a granting by the court to the General Electric Company of a license to engage in radio communication and, therefore, beyond the power of that court, and that the result of the stay order would be to deprive a large portion of the radio-listening public, particularly in the Fifth Zone, of radio broadcasting service.

On the same day the Commission filed in cause No. 4871 a written motion to dismiss the appeal (R. 376–378), assigning as grounds those which were set forth in the similar motion made in cause No. 4870 and the additional ground that the People of the State of New York did not come within the description of persons entitled to appeal under Section 16. Thereafter, on November 28, 1928, the

Commission, saving and reserving its rights under the aforesaid motions, filed the record required to be filed by it by said Section 16 and its full statement in writing of the facts and the grounds for its decision as found and given by it, a copy of which statement is set forth in the record (R. 23–48); and a copy of the record so required to be filed, condensed in accordance with stipulation of counsel, is set forth in the printed record (R. 54–204, 282–363). Because of the failure of General Electric Company to specify what decision it was complaining of and, further, because of its attack on the validity of General Order 40, the Commission included in said record documents bearing on its decision of October 12, 1928, on the first application for renewal of license, and its decision of the same day on the first application for modification, and also such documents and evidence as bore on the validity of General Order 40 and on the question as to whether the General Electric Company had had an opportunity for hearing.

On November 30, 1928, General Electric Company filed a second notice of appeal in cause No. 4880, *General Electric Company, Applicant-Appellant* v. *Federal Radio Commission,* as follows:

> Now, this 30th day of November, 1928, comes the General Electric Company, applicant-appellant in the above-entitled proceeding, and says that it is aggrieved by the decision of the Federal Radio Commission rendered on its application for renewal of

Radio Broadcasting Station License, for Station WGY, located near South Schenectady, County of Schenectady, State of New York, bearing date October 17, 1928, of which notice was sent this Applicant-appellant under date of October 27, 1928, and by it received October 29, 1928, which said decision became effective November 11, 1928, and constituted a refusal of said General Electric Company's application for renewal of existing station license theretofore issued to and at the time held by it; and the General Electric Company hereby gives notice of its appeal from the aforesaid decision to the Court of Appeals of the District of Columbia, and assigns in support thereof the reasons for appeal hereinafter set forth.

To the foregoing notice of appeal the Company attached a document entitled "Reasons for Appeal," which is an almost verbatim copy of the similar document filed on its first appeal, and was sworn to by another of its attorneys of record. (R. 22.) (R. 14–22.) In the course of oral argument on December 3, 1928, the Commission asked and obtained leave that its motion to dismiss and its motion to strike in cause No. 4870 be likewise considered as directed against the appeal of November 30, 1928, and later, on December 17, 1928, the Commission filed written motions to dismiss and to strike in said cause No. 4880 (R. 373–375, 379) in which the grounds assigned are similar to those in the previously filed motions. On December 19, 1928,

the Commission, reserving its rights with respect to said motions, filed its "Statement of Facts and Grounds for Decision" in said cause No. 4880 and the record required of it by Section 16 of the Radio Act of 1927, which record incorporated by reference certain but not all of the documents previously filed. (R. 52.)

On December 1, 1928, the Commission filed with the Court of Appeals a printed brief in said causes Nos. 4870 and 4871, and on December 3, 1928, General Electric Company and People of the State of New York each filed printed briefs, the Commission having had no knowledge of what was in said briefs when it prepared and filed its brief. Oral argument before the Court of Appeals was heard on December 3 and 4, 1928, and included argument on the Commission's above-described motions. The Commission in the course of oral argument made the further motion that General Electric Company be required to elect between its two appeals. The Court of Appeals took all of the Commission's motions under advisement, together with the merits of the case.

On December 13, 1928, General Electric Company filed with the Court of Appeals a printed brief in opposition to the Commission's several motions and on December 22, 1928, the Commission filed a reply brief thereto confined to the issues raised by said motions. The printing of the record in said

three causes was not completed until January 10, 1929. Under the rules of the Court of Appeals the appellant has a period of thirty days after the printing of the record in which to file briefs. General Electric Company did thereafter, on February 8, 1929, file its brief on the merits in said causes Nos. 4870 and 4880. Under the rules of the Court of Appeals the appellee has a further period of twenty days in which to reply to the appellant's brief. Pursuant to its rights under said rule the Commission completed the preparation of a brief on the merits in said causes and caused the same to be printed preparatory to filing. When the printing was practically half completed and three days before the brief was required to be filed, the Court of Appeals did, on February 25, 1929, render its decision and enter its judgment in all three of said causes.

On February 21, 1929, the Commission filed written motions in said court in both causes Nos. 4870 and 4880, renewing its motions to dismiss previously made and assigning as additional grounds that by virtue of the lapse of the maximum three months' license period after November 11, 1928, the questions involved in said causes had become moot questions; and that by reason of the requirements of Section 11 of the Radio Act of 1927, that the Commission determine with regard to each application for renewal of license whether the granting

thereof would serve public interest, convenience, or necessity, the Court of Appeals did not have power or jurisdiction to determine what the General Electric Company was entitled to after February 11, 1929. (R. 381–385.)

The judgment entered by the Court of Appeals on February 25, 1929, in all three of said causes was as follows:

> These causes came on to be heard on the transcript of the record from the Federal Radio Commission and were argued by counsel. On consideration whereof it is now here ordered and adjudged by this court that the appellant, the General Electric Company, was on November 11, 1928, and is now, entitled to receive from the Federal Radio Commission a renewal of its license to operate station WGY upon the same terms as those contained in the license dated November 1, 1928, to wit, upon 790 kilocycles with power of 50 kw., and without time limit for operation; and that this cause be, and the same is hereby, remanded to the Federal Radio Commission to carry this judgment into effect; costs to be assessed against the appelle. (R. 392, 393.)

(The opinion and judgment, R. 392, 393, state November 1, 1928, as the date of the license involved, whereas the actual date of said license was November 1, 1927. See R. 88–89, 17, 25.)

SUMMARY OF ARGUMENT

I

The Court of Appeals erroneously construed Section 16. None of the appeals involved herein was taken within 20 days of the Commission's decision, October 12, 1928. The Court of Appeals by implication (for it entertained and decided the appeals) took November 11, 1928, the effective date of the renewal license, as the date of the decision. The Commission believes its decision is the same as the judgment of a court, effective on the date of rendition, and that the appeals should have been dismissed for want of jurisdiction when filed more than 20 days thereafter.

The decision in question, relating to an application for renewal of license, was not appealable, since it was a renewal of license, though on somewhat different terms than those previously in force as to hours of operation. Renewal of license with slight restrictions on hours of operation is not equivalent to refusal of application. The Commission's decision merely limited the evening operation of WGY after time of sunset on the Pacific coast, or, according to a reasonable proposal of the Commission, after 10 p. m.

The appeals were moot at the time of the Court's decision, February 25, 1929, since if renewal had been granted for the maximum period permitted by law the license would have expired February

11, 1929. It was then the duty of the Commission, not the court, to consider whether renewal would then serve public interest.

The Court of Appeals relied in part on evidence submitted for the first time on appeal on affidavit of counsel. This form of introducing evidence is not allowed by the Act. There was no hearing before the Commission; the application of WGY was refused because of fatal defects appearing on the face thereof; and the Court of Appeals was not justified in substituting itself for the Commission in deciding, in the first instance, what the public interest required on the basis of evidence thus informally presented.

Section 16 does not permit the appeal of the People of the State of New York.

Assessment of costs against the Commission was error. It is not authorized by Act, and in the absence of express authority the taxpayers should not be compelled to pay the costs of General Electric Company and People of the State of New York.

II

The claim of a property right can not be sustained without holding the Act unconstitutional. The acquisition of property rights in the use of the ether is expressly precluded by specific provisions of the Act, e. g., Section 1, various portions of Section 4, the last paragraph of Section 5, the second paragraph of Section 11, Section 12, and the last

paragraph of Section 39. Moreover, in every application filed by General Electric Company, it has signed an express waiver in the language prescribed by Section 5. From the extended debates preceding the enactment of the Act, it is apparent Congress intended to negative any claim to a property right.

III

There is no property right, as against the regulatory power of the United States, to engage in broadcasting. In the court below respondent insisted there had been a violation of the Fifth Amendment; that it was deprived, or there had been a taking, of (a) the tangible physical property constituting WGY, and (b) established rights acquired by virtue of priority and use with reference to a specific frequency, power, and daily period of operation. Respondent did not enjoy the privilege of full-time operation before November 1, 1927. It has never *used* full time. Respondent has only recently had the use of a cleared channel with high power. Its transmitting apparatus is relatively new. It has only recently served the area and population it now claims the right to serve. Thus the basis for the claim a small curtailment of time resulting from the Commission's decision is tantamount to a taking of property is unsubstantial.

The Court of Appeals ignored respondent's claims under the Fifth Amendment and decided the

case on the ground the Commission erred in applying the statutory standard—although, for reasons within the control of respondent, the Commission had never had an opportunity to apply the standard.

Broadcasting is interstate commerce. *United States* v. *American Bond & Mortgage Co. et al.*, 31 F. (2d) 448 (D. C., N. D. Ill., 1929). The principles announced in the cases involving communication by wire make it clear they extend to communication by wireless. *Pensacola Telegraph Company* v. *Western Union Telegraph Company*, 96 U. S. 1. As to the regulation of radio communication, the power of Congress is exclusive. *The Minnesota Rate Cases*, 230 U. S. 252. Moreover, since radio communication is international in character and subject to treaties to which the United States is a party, the power of Congress to legislate is not limited to the Commerce Clause. *Missouri* v. *Holland*, 252 U. S. 416. There is also a legitimate basis for extensive regulation in the duty of the United States to provide for and protect means of communication for the Army, Navy, and other Executive Departments, and this duty is expressly recognized in Section 6 of the Act.

The claim of a property right has been denied in the only decisions thus far rendered under the Act. *Technical Radio Laboratory, Appellant* v. *Federal Radio Commission*, No. 4835, Court of Appeals, D.

C., decided November 4, 1929 (reprinted in U. S. Daily November 7, 1929).

The power of Congress with respect to the operation of radio stations is necessarily as great as its power over privately owned structures in or over navigable waters. Interstate navigable waters furnish a strong analogy to the medium known as the ether. See *United States* v. *Chandler-Dunbar Water Power Company,* 229 U. S. 53; *Louisville Bridge Company* v. *United States,* 242 U. S. 409. Special considerations have been recognized as present in the *overflowing* of real estate and such cases as *Pumpelly* v. *Green Bay Company,* 13 Wall. 166, are not in point. There is no analogy between the instant case and *Pennsylvania Coal Company* v. *Mahon et al.,* 260 U. S. 393; for the fundamental question in the present case is whether any property right whatsoever can be acquired in the *use* of transmitting apparatus or in the *use* of the ether.

When the United States exerts any of the powers conferred upon it by the Constitution, the Fifth Amendment imposes no greater limitation upon the national power than does the Fourteenth Amendment upon State power. Accepting respondent's claim the Commission's action is tantamount to closing down WGY, equally serious limitations of the use of property have been upheld under the exercise of the police power by States. *Mugler* v. *Kansas,* 123 U. S. 623. In radio com-

munication the end to be achieved is the protection and preservation of a newly available means of communication for use in the public interest. Radio communication is severely limited by physical laws, and it is this consideration which gives Congress correspondingly extensive power over it in protecting it as a medium of interstate commerce.

Neither the use of the ether nor the use of any property in radio communication can, by its very nature, be the basis for a property right. *Geer* v. *Connecticut,* 161 U. S. 519.

The Commission has not taken property from one individual to give it to another; it has merely slightly curtailed the excessive broadcasting service received by the public in one part of the country in order to provide the public in other parts of the country with an equitable share of service. The principle of *Los Angeles Gas & Electric Co.* v. *City of Los Angeles,* 241 Fed. 912 (aff'd. 251 U. S. 32) has no application to the present case.

IV

The Commission did not err in its decision of October 12, 1928. Section 11 does not require a hearing on an application which on its face discloses it can not be granted without violating some provision of law or valid regulation of the Commission. By reason of General Order 40, the channel of 790 kc. was assigned to the Fifth Zone and was not avail-

able to any station in the First Zone for use after sunset on the Pacific coast. It thus became impossible to grant the application for renewal according to its terms.

Ample opportunity for a hearing was afforded to and rejected by respondent. Respondent was advised of the Commission's procedure September 11, 1928, and steadfastly refused to comply with it. All respondent had to do to have a hearing was to file an application specifying a channel available for full time operation in the First Zone, and respondent was so advised over and over again. Any other procedure would be impracticable.

V

General Order 40 is a valid regulation. It is the corner stone of the allocation of broadcasting stations by which the assignments of over 600 stations are determined. In permitting WGY to broadcast on 790 kc., a cleared channel designated for full-time operation in the Fifth Zone—in thus decreasing the cleared channels assigned to the Fifth Zone to 7—the Court of Appeals has partially invalidated General Order 40, although it has carefully refrained from express condemnation of the order.

General Order 40 was enacted (a) to prevent interference and (b) to carry out the equalization provision of Section 5 of the Amendatory Act of March 28, 1928. Respondent does not attack the

order directly (for it knows good broadcasting service depends upon its existence); it insists the Commission should have provided 50 instead of 40 cleared channels. In urging this contention before the lower court, respondent disclosed a misunderstanding of the engineering advice received and used by the Commission.

The Commission has made the 40 cleared channels accommodate 80 stations, in some cases by division of time, and in other cases by making use of differences in standard time between different parts of the country, and the fact that until two stations are linked by darkness interference areas are not usually created; 554 stations had to be provided for on regional and local channels on which duplication is practical because of widespread geographical separation and the use of smaller amounts of power.

On the 40 regional channels the Commission accommodated 292 stations; on the 6 local channels it provided for 250 stations of small power; on the 4 remaining channels (exclusive of the 6 reserved for Canadian use) the Commission permitted duplication of 12 stations. To increase the number of cleared channels would necessarily increase the number of stations using regional and local channels; and, since these channels are already used by a great many more stations than they can accommodate without causing serious interference, an in-

crease in the number of cleared channels is impracticable.

Many plans were offered and carefully considered before General Order 40 was adopted. After many months of arduous labor the Commission worked out its own scheme of allocation with the assistance of its own engineers.

Respondent emphasizes the need for cleared channels. Such a channel, having a wide service area, must restrict its programs to matters of general interest. There is, however, a widespread insistent demand for programs of regional and local interest. The Commission must and did consult the interests of various types of service in framing the order.

It must be remembered General Order 40 is not the last word in broadcasting assignments. It may be stations will drop out or cease to give satisfactory service to an extent permitting or requiring a different arrangement of channels. It may be the science will make sufficient progress so that stations can operate simultaneously on the same channel to a greater extent than at present. If and when such a time arises, then a new set of regulations will be adopted by the Commission.

The Commission was instructed by Congress to make a new allocation for the benefit of the listening public. General Order 40 is the accomplishment of the task for which the Commission was primarily created.

ARGUMENT[1]

I

THE COURT OF APPEALS HAS ERRONEOUSLY CONSTRUED SECTION 16

1. *The time for the filing of the appeals.*

Section 16 requires that an appeal be taken—

> by filing with said court, within twenty days after the decision complained of is effective, notice in writing of said appeal and of the reasons therefor.

None of these appeals was taken within 20 days of the date on which the Commission's decision was made and entered, October 12, 1928. (R. 130–133.) With respect to the limitation of time for appealing, the Commission submits its decision should be viewed as the decision of any other administrative or quasi-judicial tribunal or the judgment of a court. The rule is, the limitation begins to run when the decision or judgment is entered; it is then *effective.*

Section 14 (Brief, p. 127) relating to orders of revocation provides:

> * * * That no such order of revocation shall take effect until thirty days notice in writing thereof * * * has been given to the parties * * *.

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[1] For a masterful and comprehensive statement of the scientific and legal problems of radio regulation, see Report of the Standing Committee on Radio Law, American Bar Association, 52nd Annual Meeting, Memphis, Tennessee, October 23–25, 1929.

There is no such provision with regard to the four kinds of application refusals of which are subject to appeal. Refusal of an application for renewal of license is the same in juristic nature as refusal of an application for license or refusal of an application for construction permit. The Commission could specify an effective date later than the actual date of its decision, but otherwise the decision is final and conclusive for all practical purposes when it is made.

This construction is supported by the third to the last paragraph of Section 5 (Brief, p. 120), covering appeals from decisions of the Secretary of Commerce to the Commission after December 31, 1929. After December 31, 1929, the Secretary of Commerce will have original power to make decisions on applications, but will not have such power on revocation of license. (Section 5, Brief, p. 118.)

By implication the Court of Appeals found November 11, 1928, the beginning of the period of the new license, as the effective date.

2. *The Commission's decision was not appealable.*

The Commission's decision of October 12, 1928 (R. 130–133) was construed by the Court of Appeals as a refusal of the renewal application (R. 390). The Commission believes its decision of October 12, 1928, was not an appealable decision, since it constituted a granting and not a refusal of the renewal application. Other sections of the Act

show it was the intention of Congress that the licensing authority be unrestricted at the end of a license period in changing, without a hearing, the frequency, power, or hours of operation of any station, subject only to the test of public interest, convenience, or necessity. See opening sentence of Section 1, Section 4, the last paragraph of Section 5, the second paragraph of Section 11, including condition (A), and the last paragraph of Section 39.

The Radio Act of 1927, as it stood before amendment, provided in Section 9 for maximum periods for broadcasting licenses not to exceed 3 years. This was reduced to 3 months by Section 3 of the Acts of March 28, 1928, and March 4, 1929. (Brief, pp. 143, 145.) Nevertheless, the principle remained the same. Congress sought to protect a station against changes *during the period of a license* by Section 4 (f). The chief purpose of the Act and the establishment of the Commission was to bring about a complete reallocation of broadcasting stations so as to bring some measure of order and good reception out of chaos; this meant the complete elimination of some stations and the curtailment of the privileges of a large number of others. It could hardly have been intended that a hearing was to be necessary as to each such station under Section 11 or that any change was to be the basis for an appeal.

3. *The appeals were moot at the time of the court's decision.*

If the Commission had granted the renewal application of General Electric Company to the fullest extent and for the maximum period authorized by law, the Commission would have issued such a license covering a period of three months from November 11, 1928, to February 11, 1929. Section 11 requires the Commission to examine each and every application for renewal of license and determine whether public interest, convenience, or necessity would be served by the granting thereof. Since the maximum period of broadcasting licenses is 3 months, the Commission must perform this duty every 3 months. The Court of Appeals has erroneously construed Section 16 as giving it power to make an original determination of what will serve public interest, convenience, or necessity in a case where the Commission has made no such determination in the first instance, and, in addition, a 3 months' period has elapsed so that it is again the Commission's duty to make a further determination on a further renewal application. The question as to what respondent's station was entitled to on November 11, 1928, became moot February 11, 1929, and the Court of Appeals on February 25, and March 9, 1929, had no power to determine either that question or what the respondent was "now" entitled to. (R. 392, 393, 394.) *Se-*

curity Mutual Life Insurance Company v. *Prewitt,* 200 U. S. 446; *Mills* v. *Green,* 159 U. S. 651; *American Book Company* v. *The State of Kansas ex rel. Nichols,* 193 U. S. 49; *Jones* v. *Montague,* 194 U. S. 147; *Cheong Ah Moy* v. *United States,* 113 U. S. 216; *Tennessee* v. *Condon,* 189 U. S. 64.

4. *The submission of additional evidence.*

Section 16 provides that—

> * * * Within twenty days after the filing of said appeal the licensing authority shall file with the court the originals or certified copies of all papers and evidence presented to it * * *.

The Section also provides for the adducing of additional evidence within a specified time and also that it be done by leave of court on a—

> * * * verified petition stating the nature and character of said additional evidence * * *.

As has already been pointed out, General Electric Company injected a mass of "additional evidence" into the record by attaching it to its notice of appeal. The Court of Appeals in its opinion sets forth supposed facts, evidently drawn in part from matters thus introduced into the record. (R. 391.)

5. *The appeal by the People of the State of New York.*

Under Section 16 the persons who may appeal are limited to the following:

> Any applicant for a construction permit, for a station license, or for the renewal or modification of an existing station license whose application is refused by the licensing authority * * * and any licensee whose license is revoked by the commission * * *.

Manifestly, the People of the State of New York are not entitled to appeal from a decision by the Commission refusing an application for renewal on the part of General Electric Company.

6. *The assessment of costs against the Commission.*

Section 16 does not confer authority on the Court of Appeals to assess costs against the Commission. In performing its statutory duties, the Commission acts as a quasi-judicial inferior tribunal; it is not a party in the ordinary sense, and costs should not be assessed against it in the absence of express authority. To assess costs which must eventually be furnished by the taxpayers is a case of robbing Peter to pay Paul.

The judgment of the Court of Appeals assessed costs in favor of the People of the State of New York, although said respondent manifestly had no standing on appeal. The court also assessed costs in favor of General Electric Company in both of its two appeals, although obviously one of them must have been unnecessary.

II[1]

THE CLAIM OF A PROPERTY RIGHT CAN NOT BE SUSTAINED WITHOUT HOLDING THE RADIO ACT OF 1927 UNCONSTITUTIONAL

The first section of the Radio Act of 1927, which forbids radio communication except under a license, states the Act is intended—

> * * * to maintain the control of the United States over all the channels of interstate and foreign radio transmission; and to provide for the use of such channels, but not the ownership thereof, by individuals, firms, or corporations, for limited periods of time, under licenses granted by Federal authority, and *no such license shall be construed to create any right, beyond the terms, conditions, and periods of* the license. * * * (Italics ours.) (Brief, p. 113.)

The second paragraph of Section 11, in prescribing conditions which must be inserted in every license, specified the following as among such conditions:

> The station license shall not vest in the licensee any right to operate the station nor any right in the use of the frequencies or wave length designated in the license *beyond the term thereof* nor in any other manner than authorized therein. (Italics ours.) (Brief, p. 125.)

[1] The constitutional questions are discussed only because they were presented and vigorously argued by General Electric Company in the court below.

Section 12 forbids the assignment or transfer of any license except with the written consent of the Commission.

The last paragraph of Section 5 provides for a waiver to be signed by every applicant as follows:

> No station license shall be granted by the commission or the Secretary of Commerce until the applicant therefor shall have signed a waiver of any claim to the use of any particular frequency or wave length or of the ether as against the regulatory power of the United States *because of the previous use of the same,* whether by license or otherwise. (Italics ours.) (Brief, p. 120.)

The same careful protection of the Government against the creation of any property right is revealed in the last paragraph of Section 39, in various provisions of Section 4, such as subparagraphs (c) and (f), and elsewhere in the Act. Under Sections 9 and 11 the Commission may not grant a renewal of license unless it shall find that public interest, convenience, or necessity will be served thereby. Under Section 9 the original maximum period for a broadcasting license was 3 years; this was amended March 28, 1928, so as to make the maximum period 3 months. (Brief, p. 143.)

Pursuant to the requirements of the Act, General Electric Company has, in every application filed by it with the Commission, signed an express waiver in the language prescribed by Section 5. Such a waiver was contained in and subscribed to by respondent in the very application which gave rise

to this litigation, without protest or question. (R. 95.) Every license issued to the Company by the Commission has contained the express condition prescribed by Section 11, including the license of November 1, 1927, renewal of which was sought by the application in question. (R. 88.)

Even prior to the enactment of the Act, the Company had waived any claim to a property right pursuant to the requirements of a Joint Resolution of Congress, approved December 8, 1926. (44 Stat. 917.) This resolution required that every application filed with the Department of Commerce should be accompanied by a waiver of—

> * * * any right or of any claim of right, as against the United States to any wave length or to the use of the ether in radio transmission because of previous license to use the same or because of the use thereof.

General Electric Company filed such a waiver January 10, 1927, in connection with an application to the Department of Commerce for renewal of its license and attempted to reserve its right by an accompanying protest. This waiver was rejected by the Department of Commerce, and a new waiver was filed January 17, 1927, without such a protest. (R. 69–70.)

Nothing need be added to the foregoing excerpts from the law to demonstrate the Company's claims of a property right can not possibly be sustained unless the entire Act is held unconstitutional by

this Court. The Company is manifestly attempting to gain recognition of a right "beyond the terms, conditions, and periods of the license." It is basing its claim on "previous use * * * whether by license or otherwise." If further argument be necessary to establish the intention of Congress to negative any claim to a property right in the Act, reference is made to the extended debates which took place on the Bills which led to the present law from 1923 to 1927, and particularly during the winter of 1926.

In explaining to the Senate the Bill which, by conference agreement with the House, was ultimately amalgamated with a House Bill to become the present law, Senator Dill, its author in the Senate, said, in part:

> There is another feature of the law that makes the need of legislation even more imperative than the conditions I have just described. I refer to the fact that the present law (i.e., the Radio Act of 1912) places no limit on the length of time for which the Secretary of Commerce may grant licenses. He may grant a license for 1 year, for 10 years, for 50 years, or for 100 years. The fact is that up to this time Secretary Hoover has limited all broadcasting licenses to a period of 90 days, but he is under no requirement to do this.
>
> The result of his refusal to issue licenses for broadcasting for more than 90 days is that *no individual, firm, or corporation in*

> *the United States has any vested right or any long-time lease on any wave length for radio purposes.* This leaves Congress free to legislate in such a manner as to protect the interest of the people as a whole and to retain permanently the control of wave lengths for radio purposes.
>
> Mr. President, *the very first paragraph of the bill is intended to cover the situation.* It is very similar to the House provision. I want to read the opening section of the bill because it states so clearly what I think the House intended to state, but in a little different language. (Cong. Rec., 69th Cong., 1st Sess., Part 2, p. 12351.) (Italics ours.)

Senator Dill then quoted from Section 1 of the Bill which contains language identical with the present Act in so far as the claim of vested right is concerned. He added:

> If that provision is enacted into law it absolutely settles the question of the ownership and control of the various wave-length channels. * * *

In the House Mr. Lehlbach, a member of the Committee on Merchant Marine and Fisheries which reported the bill out, said in answer to a question asked him:

> The gentleman speaks as though the present holder of the license had a vested interest in it, and that is what we want to prevent. (Cong. Rec., 69th Cong., 1st Sess., Part 5, p. 5500.)

III

THERE IS NO PROPERTY RIGHT, AS AGAINST THE REGULATORY POWER OF THE UNITED STATES, TO ENGAGE IN BROADCASTING

In the court below General Electric Company insisted it had a property right to operate WGY as a full-time station of which it could not be deprived without compensation. It also asserted prohibition of the use of WGY was a taking of the property of the Company in violation of the Fifth Amendment.

While respondent was not consistent in describing its supposed property, it was possible to discern in its claims a confusion of two somewhat different theories. Under one emphasis was laid on the tangible physical property constituting WGY, namely, its transmitting apparatus and accessory equipment; and complaint was made the Commission had prohibited the use thereof to such an extent as to constitute a taking. Under this theory respondent apparently claimed anything less than full-time operation on a cleared channel was an unlawful restriction on the use of its property, but did not insist any specific channel was an essential element of its claim. It would like the channel of 790 kc., which it has used for a long time, but would be satisfied with any channel "substantially equivalent." Within a wide range its transmitting apparatus can be adjusted to use one channel as well as another, and its claim was, therefore, with certain limita-

tions not important to this discussion, for full time on any cleared channel.

Under the Company's second theory emphasis was not on the tangible physical property but on long user of, and priority with respect to, certain privileges, i. e., full-time operation on a cleared channel, presumably with 50 kw. power and on the specific channel of 790 kc., although these last two elements were not pressed. Under this theory the *privileges* constitute the supposed property right, since the tangible physical property of WGY is not the same as that with which respondent commenced broadcasting in 1922 and, on the contrary, is of comparatively recent construction. WGY is not the 10th oldest station in the United States from the point of view of its tangible property or, in fact, from any point of view other than the continued use of certain call letters designated by the Secretary of Commerce.

In the Commission's "Statement" (Brief, p. 9) and in the record it appears—

> 1. That at no time from May, 1923, to November 1, 1927, did respondent enjoy full-time operation. (R. 50–51, 192.)
>
> 2. That at no time, even including the last license period expiring November 11, 1928, has respondent ever *used* full time. (R. 91, 97, 207–208, 241–248, 273–281.)
>
> 3. That respondent did not enjoy the use of a cleared channel for several months prior to the enactment of the Radio Act of 1927, nor for several months thereafter. (R. 192.)

4. That respondent is not using the same transmiting apparatus it used at the outset or for a considerable period thereafter. (R. 73, 90–91, 94.)

5. That respondent has had continuous authorization to use 50 kw. only since September 15, 1927, and that for most of the period prior to that it was authorized to use amounts varying from 1 kw. to 5 kw. (R. 94–95.)

6. That during the period it was using these several amounts of power it was serving a very much more restricted area than it now claims the right to serve. (Appendix D, p. 155; R. 209.)

7. That respondent has repeatedly waived any claim to a property right and, in consideration of such waiver, has received and enjoyed valuable privileges from the United States. (e. g., R. 69–70, 95.)

Thus the basis in fact for the property right urged by General Electric Company, whichever theory be adopted, is very unsubstantial. Equally unsubstantial, as is pointed out in the Commission's "Statement" (Brief, p. 15), is the basis for the claim the small curtailment of time resulting from the Commission's action amounts to such a restriction on the use of respondent's property as to be be tantamount to a taking thereof.

In urging its claims before the Court of Appeals, respondent was vague as to which of the clauses of the Fifth Amendment it relied upon; i. e., as to a deprivation of property without due process of

law, or as to a taking of property for public use without just compensation. The Court of Appeals dismissed respondent's claims under the Fifth Amendment in the following terms:

> In respect to appellant's first contention we may say that under the commerce clause of the Constitution Congress has power to provide for the reasonable regulation of the use and operation of radio stations in this country and to establish agencies, such as the Federal Radio Commission, to give effect to that authority. * * * (R. 390.)

Since General Electric Company may again press its claims under the Fifth Amendment in this Court, the Commission desires to show those claims fail if there is no private property involved, and it proposes to show there is not.

If the Commission is right in its contention, it disposes of any question as to the validity of the act and of any question as to the correctness of its decision from the point of view of the Fifth Amendment.

1. *Radio communication is interstate commerce.*

That broadcasting is interstate commerce is not open to question. It has been directly decided in *White* v. *Federal Radio Commission et al.*, 29 F. (2d) 113 (D. C., N. D. Ill., 1928); *United States* v. *American Bond & Mortgage Co. et al.*, 31 F. (2d) 448 (D. C., N. D. Ill., 1929); *Whitehurst* v. *Grimes et al.*, 21 F. (2d) 787 (D. C., E. D. Ky., 1927); and *Technical Radio Laboratory, Appellant*

v. *Federal Radio Commission,* No. 4835, Court of Appeals, D. C., decided November 4, 1929 (reprinted in U. S. Daily, Nov. 7, 1929).

In recent decisions under the Copyright Act it has been held broadcasting of a song is a performance publicly for profit. *M. Witmark & Sons* v. *L. Bamberger & Co.,* 291 Fed. 776 (D. C., D. N. J., 1923); *Jerome H. Remick & Co.* v. *American Automobile Accessories Co.,* 5 F. (2d) 411 (C. C. A. 6th, 1925); *Jerome H. Remick & Co.* v. *General Electric Co.,* 16 F. (2d) 829 (D. C., S. D. N. Y., 1926).

The passage of light rays across the Canadian border into the State of New York was held to be a bringing in, or causing to be brought in, the United States of a pictorial representation of a prize fight in violation of an Act of Congress in *Pantomimic Corp.* v. *Malone et al.,* 238 Fed. 135 (C. C. A. 2nd, 1916).

The principles announced in the many cases involving communication by wire make it clear they extend to communication by wireless: *Pensacola Telegraph Company* v. *Western Union Telegraph Company,* 96 U. S. 1; *Western Union Telegraph Company* v. *Pendleton,* 122 U. S. 347; *Postal Telegraph-Cable Company* v. *Warren-Godwin Lumber Company,* 251 U. S. 27; *Western Union Telegraph Company* v. *Boegli,* 251 U. S. 315; *Telegraph Company* v. *State of Texas,* 105 U. S. 460; *Ratterman* v. *Western Union Telegraph Company,* 127 U. S. 411; *Leloup* v. *Port of Mobile,* 127 U. S. 640; *Western*

Union Telegraph Company et al. v. *Foster and MacLeod et al.*, 247 U. S. 105.

Radio communication is one of those subjects of interstate commerce which, since it requires a general system or uniformity of regulation, is national in character. As to such a subject the power of Congress is exclusive. *The Minnesota Rate Cases*, 230 U. S. 352. As a matter of fact, it is international in character, and for many years its regulation has been subject in large measure to the provisions of treaties to which United States has been and is a party. The first of these was the Berlin Convention of 1906, ratified by the Senate in 1912; the second, the London Convention of 1912; and the third, the Washington Convention of 1927. The power of Congress to make treaties effective is not limited to the subjects with respect to which it is empowered to legislate. *In re Ross*, 140 U. S. 453; *Missouri* v. *Holland*, 253 U. S. 416.

The United States has a legitimate basis for the most extensive control of radio communication in its duty to provide for and protect means of communication for the Army, the Navy, and other Executive Departments. The Act recognizes the Government's interest is paramount. Under Section 6 (Brief, p. 121) the President can assign any or all frequencies to Government stations, and private stations must cease operating on the frequencies thus assigned. The channel of 790 kc., like any other channel in the broadcast band, is constantly subject to this contingency. The Presi-

dent may, by mere proclamation in time of national emergency, close up or suspend any and all stations without compensation, except where the Government takes over the use and operation of a station. The same paramount rights were recognized in the Radio Act of 1912. In nearly every country in the world, other than the United States, radio communication, including broadcasting, is regarded as a Government function and radio stations are owned and operated either directly by the various Governments or by corporations which are in effect Government agencies. In the United States permission has been given for temporary use of the ether by private interests but always subject to the right of the Government to put an end to the privileges thus conferred.

2. *The claim of a property right has been denied in the only decisions thus far rendered under the Act.*

The Claim was ignored by the Court of Appeals in the principal case. *General Electric Co.* v. *Federal Radio Commission,* 31 F. (2d) 630 (C. A., D. C., 1929). (R. 386.) In a recent series of cases, however, the Court of Appeals denied the claim and sustained the Commission: *Technical Radio Laboratory, Appellant* v. *Federal Radio Commission; City of New York, Appellant* v. *Federal Radio Commission; C. L. Carrell, Appellant* v. *Federal Radio Commission;* Nos. 4835, 4898, 4899, Court of Appeals, D. C., decided November 4, 1929 (reprinted in U. S. Daily November 6 and 7, 1929).

The claim of a property right was denied in *White* v. *Federal Radio Commission et al.*, 29 F. (2d) 113 (D. C., N. D. Ill., 1928). It was denied by the same court in *United States* v. *American Bond & Mortgage Co. et al.*, 31 F. (2d) 448. In that case renewal of defendant's license was refused after a substantial showing, yet the court granted a motion for preliminary injunction to restrain threatened operation of the apparatus on the ground it would cause obstruction of interstate commerce. In a scholarly and exhaustive opinion the court said (pp. 456–457):

> * * * * In the very nature of things there can be no right to the use of any particular frequency or wave length, or of the ether as against the legitimate exercise of the regulatory power of the United States.

In the court below General Electric Company placed some reliance on *The Tribune Company* v. *Oak Leaves Broadcasting Station, Inc. et al.*, Circuit Court of Cook County, Ill. Gen No. B–136864 (reprinted in Cong. Rec., Vol. 68, Part I, pp. 216–219). The opinion was rendered November 17, 1926, on a motion by defendants to set aside a preliminary injunction. Before the case was determined on the merits the Radio Act of 1927 became law. It happens, however, the court carefully negatived any intention to recognize a property right as against the United States. Referring to the Act of 1912, the court said:

Manifestly Congress has not undertaken by this enactment to assume the regulation of broadcasting stations under its constitutional powers providing for its right to regulate foreign commerce, except in so far as it has provided in the enactment. Undoubtedly Congress will undertake to control the use of broadcasting stations under its constitutional power at some time in the future and, in view of the fact that it has the power to regulate communication between States, it would probably also have the right to regulate broadcasting stations, even though not engaged in broadcasting from one State to another, on the ground that the general subject was one which came within the commerce clause of the Constitution. In order to make it effective it necessarily follows that it would have the right to control others engaged in the same line of operation, namely, in broadcasting, if such broadcasting should result in an interference with those stations actually engaged in broadcasting from one State to another.

* * * * *

This court is of the opinion, from its interpretation of the act of August 13, 1912, that Congress did not intend to undertake to assume the right to regulate broadcasting under its powers given it to regulate commerce and that, until such time as it does, litigants may enforce such rights as they may have by reason of operating broadcasting stations in the State courts having jurisdiction of the person of the parties. * * *

It is not necessary to discuss the interim report of the Committee on Radio Legislation of the American Bar Association of December 8, 1926, relied on by General Electric Company in the court below, except to point out a subsequent regular report by the Air Law Committee of the Association virtually abandoned the extreme position taken in the interim report. (Reports of the American Bar Association, Vol. 5, p. 322.)

3. *The power of Congress with respect to the operation of radio stations is necessarily as great as its power over privately owned structures in or over navigable waters.*

Interstate navigable waters furnish a strong analogy to the hypothetical medium known as the ether. The United States must have as great control over the use of the latter as it has over the former. There is need for even greater control since, by virtue of the laws of nature, the number who can engage in radio communication must be limited, for otherwise the entire public is deprived of its benefits.

Property rights have many times been asserted before this Court in structures erected and owned by private persons in or over navigable waters, and have uniformly been rejected.

In *United States* v. *Chandler-Dunbar Water Power Company,* 229 U. S. 53, this Court reviewed a judgment in a condemnation proceeding instituted under an Act of Congress of March 3, 1909

(35 Stat. 820), against the Chandler-Dunbar Company, which was engaged in using and selling water power on the St. Marys river. The Company had title both to the land along the shore of the river and river bed. Under permits from the Secretary of War, revocable at will, it had placed in the rapids, in connection with its upland facilities, the necessary dams, dykes, and forebays for the purpose of controlling the current and used its power for commercial purposes. By Act of March 3, 1909, Congress determined the entire St. Mary's river between the American bank and the international boundary line was "necessary for the purpose of navigation of said waters and the waters connected therewith" and directed condemnation proceedings. This Court reversed the judgment of the lower court in so far as it provided for compensation for loss and damage to the company because of the revocation by that Act of the permits issued by the Secretary of War for placing the structures in the river and using the power for commercial purposes.

The revocable permits of the Secretary of War are not different in nature from the short term licenses respondent has had from the Secretary of Commerce and the Federal Radio Commission. Section 2 of the Radio Act of 1912 (37 Stat. 303) provides in part:

> * * * Every such license shall be subject to the regulations contained herein and such regulations as may be established from

time to time by authority of this Act or subsequent acts and treaties of the United States. * * *

The conditions in licenses from the Commission are explicit in their reservation of control.

The cases dealing with the removal or alteration of bridges are equally in point and represent a gradual progression from a half-hearted to a complete recognition of the plenary power of Congress. The question first arose in *Bridge Company* v. *United States,* 105 U. S. 470. This case was followed by *Union Bridge Company* v. *United States,* 204 U. S. 364. A criminal proceeding had been brought against a bridge company for failure to comply with the order of the Secretary of War to make certain changes or alterations after he had found the bridge to be an unreasonable obstruction of the free navigation of the Allegheny river. The bridge company had built the bridge under authority from the Pennsylvania legislature by an Act approved in 1873. It was contended the Rivers and Harbors Act of 1899 was unconstitutional, in that it made no provision, and the United States had not offered, to compensate the bridge company for the sum necessary to be expended in order to make the alterations required by the Secretary of War. This contention was overruled.

The case was followed by several of a similar nature which need not be reviewed: *Monongahela Bridge Company* v. *United States,* 216 U. S. 177; *Hannibal Bridge Company* v. *United States,* 221

U. S. 194; *Philadelphia Company* v. *Stimson,* 223 U. S. 605. Finally in *Louisville Bridge Company* v. *United States,* 242 U. S. 409, this Court upheld the action of the Secretary of War in requiring alterations of a bridge under the Rivers and Harbors Act of 1899, although the bridge had been erected pursuant to authority in the Acts of 1862 and 1865 given without reservation.

The subject was reviewed in *Sanitary District of Chicago* v. *United States,* 266 U. S. 405. See also *Greenleaf Johnson Lumber Company* v. *Garrison,* 237 U. S. 251.

In *Louisville and Nashville Railroad Company* v. *Mottely,* 219 U. S. 467, the Supreme Court upheld the provision in the Interstate Commerce Act forbidding the issuance of passes to any but certain classes of persons. Mottely had, many years prior to the decision, suffered personal injuries through the negligence of the railroad, and had settled his claim against the railroad by accepting its agreement to issue him an annual pass for the rest of his life. The provision in the Interstate Commerce Act took his property away from him without compensation. He was held to be without remedy because he at all times knew, and was subject to the fact, that Congress might, in the exercise of its plenary power over interstate commerce, pass a law which would forbid the issuance of passes.

The several cases cited by respondent in the lower court are readily distinguishable. Three of them—

Pumpelly v. *Green Bay Company,* 13 Wall. 166, *United States* v. *Lynah,* 188 U. S. 445, and *United States* v. *Cress,* 243 U. S. 316—have to do with the overflowing of real estate as the result of the placing of dams in rivers, the real estate having previously been unaffected by the flow of such rivers. As opposed to these cases may be cited such cases as *Gibson* v. *United States,* 166 U. S. 269, *Scranton* v. *Wheeler,* 179 U. S. 141, *Bedford* v. *United States,* 192 U. S. 217, *Fox River Paper Company et al.* v. *Railroad Commission of Wisconsin,* 274 U. S. 651, and *Jackson* v. *United States,* 230 U. S. 1, also involving serious damage to real estate, such as the interruption of access from riparian land to a navigable channel, where the right to compensation was denied. Special considerations have been recognized as present in the *overflowing* of real estate, owing to the time-honored extensive property right which has been recognized in lands (see particularly *Pumpelly* v. *Green Bay Company, supra*) and the complete deprivation of possession which an overflowing results in. In the instant case, however, there has been only a partial curtailment of the *use* of the transmitting apparatus, and the sanctity of real property is not involved.

There is no analogy between the instant case and the facts in *Pennsylvania Coal Company* v. *Mahon et al.,* 260 U. S. 393, and *Delaware, Lackawanna and Western Railroad Company* v. *Town of Morristown et al.,* 276 U. S. 182, cited by respondent in the court

below. The fundamental question in the present case is whether any property right whatsoever can be acquired in the *use* of a radio transmitting apparatus in interstate commerce, or in the *use* of the ether. It is the Commission's contention that no such right can be acquired or, in fact, any right further than that provided by license granted in accordance with the Act.

4. *When the United States exerts any of the powers conferred upon it by the Constitution, the Fifth Amendment imposes no greater limitation upon the national power than does the Fourteenth Amendment upon State power.*

That the United States in exercising a power conferred upon it by the Constitution may go as far as a State in imposing restrictions upon the use or disposition of property is clear from decisions of this Court in *Hamilton* v. *Kentucky Distilleries & Warehouse Company,* 251 U. S. 146, *Jacob Ruppert* v. *Caffey et al.,* 251 U. S. 264, and *Lambert* v. *Yellowley et al.,* 272 U. S. 581. Counsel are, therefore, justified in examining those cases in which this Court has sustained exercises of the police power by States to the extent of forbidding the use of property, or of seriously curtailing the use.

The police power is no longer regarded as limited to the health, peace, and morals of the community; it extends to acts which develop resources, and contribute to wealth, public convenience, or general prosperity. *Jacobson* v. *Massachusetts,* 197 U. S. 11; *Chicago, Burlington & Quincy Rail-*

way Company v. *People of the State of Illinois*, 200 U. S. 561. And see *Miller et al.* v. *Board of Public Works of the City of Los Angeles et al.*, 234 Pac. 381; *Marrs et al.* v. *City of Oxford et al.*, 24 F. (2d) 541 (D. C., D. Kans., 1928).

For the purpose of this discussion the Commission accepts as true respondent's assertion the Commission's action is tantamount to closing down WGY. Many kinds of business have been closed down completely; many kinds of property have been rendered useless, without compensation, in the exercise of State police power. It is true certain of the statutes which have been upheld have been for the protection of health and morals; it is equally true many others have not. The question is one of the public importance of the end to be achieved; if important enough, the claims of private individuals give way without compensation.

In radio regulation the end to be achieved is the protection and preservation of a newly available medium of communication for use in the public interest. It is useless unless the number who engage in it is rigidly limited. If a private *right* to engage in it is recognized, independently of the test of public interest, then the many private uses will destroy its public use. Radio communication is severely limited by physical laws, and it is this consideration which gives Congress correspondingly extensive power over it in protecting it as a medium of interstate commerce. Congress must have power to prohibit altogether, if it chooses, the use of any

particular transmitting apparatus. The channels must be open for such uses as it, or the agency which it creates, may from time to time find best calculated to serve the public. Individual rights cannot be permitted to be more than temporary and confined within the four corners of licenses.

Illustrations of extreme exercises of police power by State legislatures to the point of rendering property useless, which have been upheld, are *Mugler* v. *Kansas,* 123 U. S. 623, the manufacture and sale of intoxicating liquors within the State; *Powell* v. *Pennsylvania,* 127 U. S. 678, sale of oleomargarine; *Pierce Oil Corporation* v. *City of Hope,* 248 U. S. 498, storage of fuel within certain localities; *Reinman* v. *City of Little Rock,* 237 U. S. 171, livery stables in designated areas; *Barbier* v. *Connolly,* 113 U. S. 27, buildings for laundry purposes, etc. See also *The Hebe Company et al.* v. *Shaw,* 248 U. S. 297; *St. Louis Poster Advertising Company* v. *City of St. Louis et al.,* 249 U. S. 269; *L'Hote* v. *New Orleans,* 177 U. S. 587; *Thomas Cusack Company* v. *City of Chicago et al.,* 242 U. S. 526; *Hadacheck* v. *Sebastian,* 239 U. S. 394; *Union Oil Co.* v. *City of Portland,* 198 Fed. 441 (D. C., D. Ore., 1912); *Corvallis Creamery Co.* v. *Van Winkle et al.,* 274 Fed. 454 (D. C., D. Ore., 1921); *Scott et al.* v. *Frazier et al.,* 258 Fed. 669 (D. C., D. N. D., 1919).

Comprehensive zoning ordinances are not dissimilar in their purposes and requirements to the equalization amendment applied to broadcasting

stations. They have consistently been upheld. *Village of Euclid et al.* v. *Ambler Realty Company,* 272 U. S. 365; *Zahn et al.* v. *Board of Public Works et al.,* 274 U. S. 325; *American Wood Products Company et al.* v. *City of Minneapolis,* 21 F. (2d) 440 (D. C., D. Minn., 1927). See also *Gorieb* v. *Fox et al.,* 274 U. S. 603; *Welch* v. *Swasey et al.,* 214 U. S. 91; *Miller et al.* v. *Board of Public Works of City of Los Angeles et al.,* 234 Pac. 381.

A gas company has no such property right in the location of its pipes and mains laid under an exclusive franchise as to make the imposition on it of the cost of changes in the location of such pipes and mains, necessitated by the construction of the municipal drainage system, a taking of property without compensation. *New Orleans Gas Light Company* v. *Drainage Commission of New Orleans,* 197 U. S. 453. See also *Denver & Rio Grande Railroad Company* v. *City of Denver et al.,* 250 U. S. 241.

In *Miller et al* v. *Schoene,* 276 U. S. 272, the Virginia Cedar Rust Act providing for the destruction of all cedar trees within two miles of any apple orchards in order to prevent communication of the disease to apple trees, was held constitutional.

See also *Walls et al.* v. *Midland Carbon Company et al.,* 254 U. S. 300; *Laurel Hill Cemetery* v. *City and County of San Francisco,* 216 U. S. 358; *Douglas* v. *Kentucky,* 168 U. S. 488; *Eldridge* v. *Trezevant,* 160 U. S. 452; *Ohio Oil Company* v. *Indiana,* 177 U. S. 190; *Geer* v. *Connecticut,* 161 U. S. 519.

Illustration of the extent to which Congress has already gone in its exercises of the interstate commerce power are *Champion* v. *Ames,* 188 U. S. 321, prohibition of lottery tickets in interstate commerce; *Hoke and Economides* v. *United States,* 227 U. S. 308, and *Caminetti* v. *United States,* 242 U. S. 470, Mann Act; *Hipolite Egg Company* v. *United States,* 220 U. S. 45, Pure Food Act; *Reid* v. *Colorado,* 187 U. S. 137, diseased stock.

A person does not secure a vested right to carry on a particular business by engaging in it prior to any legislation on the subject. *New Orleans Gas Company* v. *Louisiana Light Company,* 115 U. S. 650.

5. *Neither the use of the ether nor the use of any property in radio communication can, by its very nature, be the basis of a property right.*

The nature and quantum of the rights of those engaged in radio communication can not be adequately considered without an examination of the nature of property rights in general. It is elemental that there are no absolute rights in civilized society.

> Property in land must be considered, for many purposes, not as an absolute, unrestricted dominion, but as an aggregation of qualified privileges, the limits of which are prescribed by the equality of rights, and the correlation of rights and obligations necessary for the highest enjoyment of land by the entire community of proprietors. * * *

Doe, J., in *Thompson* v. *The Androscoggin River Improvement Co.*, 54 N. H. 545, 551.

Property interests have been defined as no more than legal relations of lesser or greater value, any one of which may accurately be brought within the popular term "private property." The word "property" has no definite or stable connotation. It is not defined in the Constitution. Sometimes it is employed to indicate the physical object to which various legal rights, privileges, etc., relate; then again, with far greater discrimination and accuracy, the word is used to denote the legal interests or aggregate of legal relations appertaining to such physical object. To say that A owns a piece of land is really to assert that he is vested by law with a complex aggregate of legal rights, powers, privileges, and immunities, all relating to the land in question.

When society recognizes in an individual rights, powers, privileges, and immunities, it usually creates property in a legal sense, and after society has recognized these rights, powers, privileges, and immunities for a period of time, it becomes quite safe to assert that an individual has "property." There may be a prediction that another individual will be permitted the same rights, powers, privileges, and immunities as have been granted in the past to others in the same or similar situation. It is society, therefore, operating through its courts of law, that creates "property" and not the individual. Prop-

erty rights become uncertain as some additional element, heretofore absent or latent, becomes of sufficient economic, social, or political importance to produce an opposite result.

It has been said that the individual acquires property interests in three ways—first, by appropriation; second, by creation; and, third, by acquisition under the prevailing social, economic, or legal system by exchange, purchase, gift, or succession. The first and second of these have always been spoken of as giving a "natural" title to property. Possession of what one discovers is so in accord with a fundamental human instinct that discovery and occupation have been recognized in the jurisprudence of all countries.

Roman jurists recognized that certain things were not subject to acquisition in any of the foregoing ways, although they did recognize most things were destined by nature to be controlled by man, since such control expressed their natural purpose. Some things, however, were not destined to be controlled by individuals, since individual control would run counter their natural purpose. Hence they could not be subjects of prior ownership. Therefore, ownership was excluded when the nature of the thing was adapted to general use or adapted to public use for public purposes. In modern law, as the result of the medieval confusion of the power of the sovereign to regulate the use of things as contrasted with the ownership of things, it has been necessary to distinguish between, first, those things

which can not be owned at all; second, those things which may be owned by public corporations but may not be transferred; and, third, those things which may be owned by public corporations in full dominion.

The case of *Geer* v. *Connecticut*, 161 U. S. 519, involves the power of the State to make unlawful the transportation out of the State of animals, *ferœ naturæ*, when the same had been reduced to possession. This case stands for the principle that the source of the police power of a State is in the duty of the State to preserve for its people that which is common to all and the source of a valuable food supply. The case discusses the region of private ownership. Mr. Justice White, in delivering the opinion of the court, quotes from Pothier No. 21 as follows (p. 525):

> "The first of mankind had in common all those things which God had given to the human race. This community was not a positive community of interest like that which exists between several persons who have the ownership of a thing in which each have their particular portion. It was a community which those who have written on this subject have called a negative community, which resulted from the fact that those things which were common to all belonged no more to one than to the others, and hence no one could prevent another from taking of these common things that portion which he judged necessary in order to subserve his

wants. Whilst he was using them others could not disturb him, but when he had ceased to use them, if they were not things which were consumed by the fact of use, the things immediately reentered into the negative community, and another could use them. The human race having multiplied, men partitioned among themselves the earth and the greater part of those things which were on its surface. That which fell to each one among them commenced to belong to him in private ownership, and this process is the origin of the right of property. Some things, however, did not enter into this division and remain therefore to this day in the condition of the ancient and negative community. No. 21."

Referring to those things which remain common or in what he qualified as the negative community, this great writer says:

"These things are those which the jurisconsults called *res communes.* Marcien refers to several kinds—the air, the water which runs in the rivers, the sea, and its shores * * * As regards wild animals, *feræ naturæ,* they have remained in the ancient state of negative community." * * *

Further in the opinion it is stated (p. 526):

The common law of England also based property in game upon the principle of common ownership, and therefore treated it as as subject to governmental authority.

Blackstone, whilst pointing out the distinction between things private and those which are common, rests the right of an in-

dividual to reduce a part of this common property to possession, and thus acquire a qualified ownership in it, on no other or different principle from that upon which the civilians based such rights. 2 Bl. Com. 1 and 12.

Referring especially to the common ownership of game, he says:

"But after all, there are some few things which, notwithstanding the general introduction and continuance of property, must still unavoidably remain in common, being such wherein nothing but an usufructuary property is capable of being had; and therefore they still belong to the first occupant during the time he holds possession of them and no longer. Such (among others) are the elements of light, air, and water, which a man may occupy by means of his windows, his gardens, his mills, and other conveniences; such also are the generality of those animals which are said to be *feræ naturæ*, or of a wild and untamable disposition, which any man may seize upon or keep for his own use or pleasure." 2 Bl. Com. 14. * * *

(P. 529.) Whilst the fundamental principles upon which the common property in game rests have undergone no change, the development of free institutions has led to the recognition of the fact that the power or control lodged in the State, resulting from this common ownership, is to be exercised, like all other powers of government as a trust for the benefit of the people, and not as a

prerogative for the advantage of the government, as distinct from the people, or for the benefit of private individuals as distinguished from the public good. Therefore, for the purpose of exercising this power, the State, as held by this court in *Martin* v. *Waddell*, 16 Pet. 410, represents its people, and the ownership is that of the people in their united sovereignty. The common ownership, and its resulting responsibility in the State, are thus stated in a well-considered opinion of the Supreme Court of California:

"The wild game within a state belongs to the people in their collective sovereign capacity. *It is not the subject of private ownership except in so far as the people may elect to make it so; and they may, if they see fit, absolutely prohibit the taking of it, or traffic and commerce in it, if it is deemed necessary for its protection or preservation of the public good.*" *Ex parte Maier*, *ubi sup.* (Italics ours.)

Further in the opinion (p. 533) is the following extract from *State* v. *Rodman*, 58 Minn. 393, 400:

The preservation of such animals as are adapted to consumption as food or to any other useful purpose, is a matter of public interest; and it is within the police power of the State, as the representative of the people in their united sovereignty, to make such laws as will best preserve such game, and secure its beneficial use in the future to the citizens, and to that end it may adopt any reasonable regulations, not only as to time

and manner in which such game may be taken and killed, but also imposing limitations upon the right of property in such game after it has been reduced to possession. *Such limitations deprive no person of his property, because he who takes or kills game had no previous right of property in it, and when he acquires such right by reducing it to possession he does so subject to such conditions and limitations as the legislature has seen fit to impose.* See also *State* v. *Northern Pac. Exp. Co.*, 58 Minn. 403. (Italics ours.)

6. *The Commission has not taken property from one individual to give it to another; it has merely slightly curtailed the excessive broadcasting service received by the public in one part of the country in order to provide the public in other parts of the country wth an equitable share of service.*

The principle of *Los Angeles Gas & Electric Co.* v. *City of Los Angeles et al.*, 241 Fed. 912 (aff'd., 251 U. S. 32), has no application to the present case.

Pursuant to the equalization amendment the Commission curtailed the broadcasting facilities enjoyed to the point of congestion in the First and Fourth Zones, in order to make possible a fair measure of broadcasting service for the listening public in the Third and Fifth Zones. In other words, the test of "public interest, convenience, or necessity," applied logically to the new situation created by broadcasting stations, led to the reduc-

tion of *duplication* of service in one zone to provide a measure of service in another.

We believe broadcasting stations, as a matter of juristic analysis, will be classified as public utilities, not, however, of the common carrier type (such as telephone and telegraph companies, where the emphasis is on the right of *sending*) but of the public-service corporation type (such as light, heat, and water companies, where the emphasis is on the right to *receive service*). We take the liberty of quoting from the statement recently filed by the Commission in *Great Lakes Broadcasting Company, Appellant* v. *Federal Radio Commission,* No. 4900, Court of Appeals, D. C.:

> To pursue the analogy of telephone and telegraph public utilities is, therefore, to emphasize the right of the *sender* of messages to the detriment of the listening public. The Commission believes that such an analogy is a mistaken one when applied to broadcasting stations; the emphasis should be on the *receiving* of service, and the standard of public interest, convenience, or necessity should be construed accordingly. This point of view does not take broadcasting stations out of the category of public utilities or relieve them of corresponding obligations; it simply assimilates them to a different group of public utilities, i. e., those engaged in purveying commodities to the general public, such, for example, as heat, water, light, and power companies, whose duties are to *consumers,* just as the duties of broadcasting

> stations are to listeners. The commodity may be intangible but so is electric light; the broadcast program has become a vital part of daily life. Just as heat, water, light, and power companies use franchises obtained from city or state to bring their commodities through pipes, conduits, or wires over public highways to the home, so a broadcasting station uses a franchise from the Federal Government to bring its commodity over a channel through the ether to the home.

At another point in the same statement the Commission said:

> One clear instance where priority has had to give way, and in proper cases will continue to have to give way, is where the junior applicant proceeds from a Zone or State, which is not getting the equal or the fair and equitable share of broadcasting service to which it is entitled under the law. This is a logical corollary of established public utility law. Since the total available broadcasting facilities are so limited, it is axiomatic that all parts of the United States should be afforded at least a fair degree of broadcasting service before the claims of any particular community to a greater share of service can justly be recognized. A mandate to carry out this principle was given to the Commission in general language by Section 9 of the Radio Act of 1927, and in specific language by Section 5 of the Amendatory Act of March 28, 1928.

The statement then proceeds to point out the distinction between the manner in which the question of priority was raised in that case (where it was quite properly considered and given weight by the Commission on a hearing resulting from applications filed in accordance with the Commission's regulations) and the manner in which respondent seeks to raise it in the instant case.

An examination of the decisions of the Supreme Court on businesses found to be affected with a public interest demonstrates it is impossible to arrived at a precise definition. It will be observed that as a general rule the following elements are present:

1. That the business be under an obligation to serve the entire public within its service area without discrimination.

2. That the business be such that the prices or rates which may be charged may be fixed by the legislature.

3. That the business be such as to call for and receive public assistance in the way of condemnation or the exercise of the power of eminent domain, or a valuable franchise, such as the use of streets.

4. That the business be such that it is a natural monopoly or nearly so, with the result that the seller and the buyer are not on an equal bargaining basis.

Some businesses have been held by this Court to be affected with a public interest, although not all four of the above listed elements will be found in

them. One example is the grain elevator and warehouse business, as to which state statutes fixing maximum rates were upheld in *Munn* v. *Illinois*, 94 U. S. 113, *Budd* v. *New York*, 143 U. S. 517, *Brass* v. *North Dakota ex rel. Stoeser*, 153 U. S. 391. Another example is the insurance business, as to which a Kansas statute prescribing rates on premiums was upheld in *German Alliance Insurance Company* v. *Lewis*, 233 U. S. 389. Leading cases illustrating the limitations of the principle are *Chas. Wolff Packing Company* v. *Court of Industrial Relations of the State of Kansas*, 262 U. S. 522, and *Tyson and Brother* v. *Banton et al.*, 273 U. S. 418. Insurance companies do not, either as a matter of practice or of legal obligation, serve all customers without discrimination and do not enjoy any special franchises or the power of eminent domain.

Broadcasting stations, either partly or wholly, contain all four of the elements usually found in public utilities. By reason of the laws of nature they serve the entire public within their service area without discrimination; if they attempted discrimination by employing a form of transmission which could be received only by a special patented device and could not be received by the ordinary receiving set, the Government would soon put an end to the practice. That they are under an obligation to give service during all hours at which the public usually expects to receive broadcasting

has already been recognized by the Commission. It is true they can not charge their listeners; but nevertheless the compensation from the listeners is without discrimination; nature has fixed the price as nothing so far as money goes, and the compensation consists in the creation of good will and other ordinary results of advertising.

A very important element is the enjoyment of a franchise. A broadcasting station has such a franchise in its license to use one of the limited number of channels, a privilege which is necessarily restricted to very few persons and can not be enjoyed by all. The element of a natural monopoly is also present, particularly in the many communities of the United States which have only one broadcasting station in operation. The listener has no opportunity or power to bargain as to what programs he shall receive in any part of the country.

IV

THE COMMISSION DID NOT ERR IN ITS DECISION OF OCTOBER 12, 1928

Under this heading the Commission assumes the validity of the Act and of General Order 40 and other regulations so far as they are involved in this case. There is, therefore, no question of either any property right, or as to whether the Commission should have provided 50 cleared channels instead of 40, or as to whether the Commission should not have assigned the channel of 790 kc. to the Fifth Zone, or as to whether the Commission is justified in re-

quiring every applicant to specify definitely the channel, the power, the hours of operation which he seeks to have the Commission grant him.

As one point (Brief, p. 38) we took the position that an application for renewal is *granted,* not denied, even though the new license differs in some respect from the former one, and that, therefore, there was no legal obligation on the Commission to hold a hearing and no legal right in the applicant to appeal. There is nothing to add to what was said on the subject. The Commission will, for the purpose of this discussion, accept respondent's construction of the Act with reference to such an application.

1. *Section 11 of the Radio Act of 1927 does not require a hearing on an application which on its face discloses that it can not be granted without violating some provision of the law or a valid regulation of the Commission.*

Under respondent's construction its application for renewal dated January 14, 1928, asked for a license to operate full time on 790 kc., with 50 kw. power. It certainly did not ask for any channel "substantially equivalent."

By reason of the Commission's General Order 40 on August 30, 1928, which is assumed to be valid, that channel was assigned to the Fifth Zone and was not available to any station in the First Zone for operation after sunset on the Pacific Coast. It thus became impossible to grant the application for renewal. Ample opportunity was given respondent

to make application for other channels which were substantially equivalent and a procedure was devised for hearings on such applications. Respondent followed the procedure to the extent of using and filing the forms provided but insisted on repeating its application for the same channel, and, in addition, on asking for power three times as great as the maximum permitted by the Commission's regulations. This was the application for modification filed October 5, 1928, denied by the Commission October 12, 1928. This application did *not* ask or even suggest a channel " substantially equivalent "; it stood on the demand for 790 kc.

Whether, then, the application for renewal alone be considered, or whether it be considered as modified by the application filed October 5, 1928, it disclosed on its face that it could not be granted without violating the provisions of General Order 40 and destroying the principles of equalization and of engineering upon which it was based.

The due process clause does not require a hearing where a hearing would be a useless ceremony. Section 11 requires a hearing on the issue, when duly raised by a proper application, as to whether the granting of an application will serve public interest, convenience, or necessity.

In *Smith et al.* v. *Foster et al.*, 15 F. (2d) 115, 116 (D. C., S. D. N. Y., 1926), Judge Thacher said with reference to an appeal proceeding involving the issuance of a liquor permit, the following:

> * * * The application upon its face may disclose circumstances justifying its denial without a hearing. Facts conceded or not disputed in the correspondence between the Commissioner or his subordinates and the applicant may also justify a summary refusal of a permit. Uncontroverted facts may of course be accepted and acted upon without formal hearing, and where the conceded facts are sufficient to warrant refusal of the permit, certainly the applicant can not complain if a hearing be not granted. Hence it would have been uselessly burdensome had the statute required a hearing upon every application. From its failure to do so it is to be plainly inferred that Congress intended that such hearings should only be had when required in the proper and lawful exercise of judicial discretion.

Suppose an application for a license, or for a renewal of license, or for a modification of license, discloses that the applicant is an alien. Under the provisions of Section 12 (Brief, p. 126) the Commission is forbidden to grant a license to such an applicant. Is a hearing necessary under Section 11?

Suppose the application discloses that the applicant has been adjudged guilty of unlawfully monopolizing radio communication. Under Section 13 (Brief, p. 126) the Commission is directed to refuse a license or permit to such an applicant. Is a hearing necessary under Section 11?

These questions answer themselves. In spite of the seemingly broad language of Section 11, a hear-

ing is not necessary where the application discloses that it can not be granted. Theoretically one is entitled to a hearing in court on any lawful claim he may have. This right does not prevent his case being thrown out of court without hearing if, on demurrer or motion to dismiss, his statement of his case in his declaration or other pleading reveals on its face that he is seeking something to which he is not entitled under the law.

The same reasoning applies with equal force to an application seeking something which can not be accorded the applicant under valid regulations of the Commission. Suppose the Commission should adopt a regulation to the effect that no person whose license has been revoked shall be heard on an application for a license filed within 6 months thereafter; or that no person whose application had been denied after hearing would be heard on another application for the same privileges filed within 6 months. Does Section 11 nevertheless require hearings on applications filed in violation of such regulations? If it does, of what use is the power given by Section 11 to prescribe rules and regulations governing hearings?

Under the International Radiotelegraph Convention signed at Washington in December, 1927, the United States is obligated to put into force certain regulations, designed chiefly for the purpose of preventing international interference. Suppose the Commission, in fulfilling international obligation, passes regulations to the effect that no application

will be entertained which seeks a license to operate antiquated apparatus such as a spark transmitter? Must a hearing be held nevertheless?

Suppose an applicant asks for a license to broadcast on a channel outside the broadcast band, on a channel devoted to ship or aeroplane communication or to transoceanic wireless, under regulations of the Commission; or he asks for one of the channels which the Commission has ruled should be reserved exclusively for Canadian stations. Must the useless ceremony of a hearing be indulged in?

Section 11 itself, however, is so worded as to negative the idea that hearings are necessary on all applications that are not granted. The issue on which it contemplates and requires hearings is whether public interest, convenience, or necessity would be served by the granting of an application. The use of the phrase and the manner in which it is carried through both of the two sentences covering hearings makes it clear that this was the intent of Congress. Furthermore, the mention of rules and regulations in connection with hearings means restrictions may be placed on them by the Commission. Forms, methods of pleading and presentation, and other formalities may be prescribed.

It seems to us that Section 11, therefore, must be construed as requiring a hearing only on a application which states a good case. If the Commission's regulations are valid, respondent's application did *not* state a good case.

2. *Ample opportunity for a hearing was afforded to and rejected by General Electric Company.*

The Fifth Amendment does not make rigid requirements as to the form which a hearing must take. It is usually considered sufficient that a party have a reasonable opportunity to be heard, on notice to all others interested. It is never considered improper or unlawful to make hearings subject to reasonable rules and regulations.

The opportunity given respondent in this case has been described at length in the "Statement." Respondent was advised of the procedure on September 11, 1928, and steadfastly and persistently refused to comply with it. All respondent had to do to have a hearing was to file an application specifying a channel available for full-time operation to stations in the First Zone, and respondent was so advised over and over again. There are eight cleared channels available to First Zone stations; the company would have this Court believe it is better entitled to one of those channels than one or more of the stations to which the Commission tentatively granted them. The Commission asks only that respondent specify which one; presumably respondent will choose the channel occupied by the station which, in its opinion, has the weakest case.

Once this procedure has been followed it becomes a comparatively simple matter to determine what are the issues and adjudicate them. WGY might, in such a hearing, compare itself with the

other station in point of priority, service rendered, needs of its listening public, and any other considerations which it thinks pertinent. The other station will have a similar opportunity. The result will be a record which will give the Court of Appeals something to pass upon, not an *ex parte* statement such as that upon which respondent would have the Court of Appeals adjudicate the rights of stations not before it.

The only other alternative would be for the Commission to call before it *all* the stations in the First Zone now assigned to cleared channels. This happens to be ten stations, because in two cases there is a division of time between stations. Instead of the applicant having the burden of selecting the weakest and most vulnerable station as a respondent, all ten stations must become parties to every controversy involving a cleared channel in the First Zone. This means that a hearing which now takes 1 to 3 days will in every case take 10 to 30 days, with unnecessary parties constantly under the burden of making a record to protect themselves on appeal. If General Order 40 is not held valid, it may mean that *every* broadcasting station is a party to every controversy.

After almost two years of careful study the Commission (which includes a former justice of the highest court in West Virginia and another of the highest court in Mississippi) and its Legal Division are convinced that its present procedure is the *only*

one adapted to the peculiar issues raised in controversies between broadcasting stations. It is the only one which squares with engineering facts. Any other involves tremendous hardship and unnecessary expense to stations, tremendous waste of time and money by the Government, and confusion which will lead to injustice. The Commission earnestly urges that this Court uphold this procedure. The only harm which respondent will suffer is, it will have to demonstrate to the Commission, and, on appeal, to the Court of Appeals, it is better entitled to full time operation on a cleared channel than some other First Zone station. With the great equities in its favor it can not be that General Electric Company is afraid of such a test of the excellence of its station.

V

GENERAL ORDER 40 IS A VALID REGULATION

The cornerstone of the allocation of broadcasting stations in the broadcast band, by which the assignments of over 600 broadcasting stations are determined (as well as the rights of the five zones and indirectly the States within each zone, and the rights of Canadian stations) and protected, is General Order 40. (R. 100.) If this order is valid, it is the end of respondent's case. It is supplemented by General Order 42, which, inasmuch as it merely deals with the power which may be used on cleared channels, is not of vital importance in this appeal. (R. 110.)

It would be superfluous to enter upon a discussion of legal principles as to what does or does not constitute a valid regulation. The general test is, of course, reasonableness in accordance with the standard prescribed by statute. A wide discretion necessarily has to be lodged with the administrative tribunal of experts invested with the legislative authority of promulgating regulations. The question of validity in a case such as the present is, therefore, primarily one of fact.

General Order 40 was enacted to attain two objects simultaneously, both prescribed by Congress: (1) To prevent interference and (2) to carry out the equalization provisions of Section 5 of the Amendatory Act of 1928. (Brief, p. 144.)

The mandate from Congress to carry out the first of these two objects is contained in Section 4, in which the Commission is instructed "as public convenience, interest, or necessity requires" to classify radio stations; to prescribe the nature of their service; to assign bands of frequencies to classes of stations, and to assign frequencies to individual stations and determine the power and hours of operation thereof; to determine the location of stations; to establish areas or zones to be served by any stations and (subparagraph f) to—

> Make such regulations not inconsistent with law as it may deem necessary to prevent interference between stations and to carry out the provisions of this Act: *Provided, however,* That changes in the wave

lengths, authorized power, in the character of emitted signals, or in the times of operation of any station, shall not be made without the consent of the station licensee unless, in the judgment of the commission, such changes will promote public convenience or interest or will serve public necessity or the provisions of this Act will be more fully complied with.

To carry out the second object the original Act of 1927, in Section 9, prescribed the following:

> In considering applications for licenses and renewals of licenses, when and in so far as there is a demand for the same, the licensing authority shall make such a distribution of licenses, bands of frequency of wave lengths, periods of time for operation, and of power among the different States and communities as to give fair, efficient, and equitable radio service to each of the same.

The Commission did very little to carry out either object during the first year of its existence. As a result of this Congress amended the second paragraph of Section 9 to read as follows:

> It is hereby declared that the people of all the zones established by section 2 of this Act are entitled to equality of radio broadcasting service, both of transmission and of reception, and in order to provide said equality the licensing authority shall as nearly as possible make and maintain an equal allocation of broadcasting licenses, of bands of frequency or wave lengths, of periods of time for opera-

tion, and of station power, to each of said zones when and in so far as there are applicants therefor; and shall make a fair and equitable allocation of licenses, wave lengths, time for operation, and station power to each of the States, the District of Columbia, the Territories and possessions of the United States within each zone, according to population.

The licensing authority shall carry into effect the equality of broadcasting service hereinbefore directed, whenever necessary or proper, by granting or refusing licenses or renewals of licenses, by changing periods of time for operation, and by increasing or decreasing station power, when applications are made for licenses or renewals of licenses: *Provided,* That if and when there is a lack of applications from any zone for the proportionate share of licenses, wave lengths, time of operation, or station power to which such zone is entitled, the licensing authority may issue licenses for the balance of the proportion not applied for from any zone, to applicants from other zones for a temporary period of ninety days each, and shall specifically designate that said apportionment is only for said temporary period. Allocations shall be charged to the State, District, Territory, or possession wherein the studio of the station is located and not where the transmitter is located.

In respondent's brief in the Court of Appeals in supposed support of the proposition that Congress

did not intend the Commission to make any change in the assignment of a station such as WGY, a quotation was set forth from the report of the House Committee on Merchant Marine and Fisheries with a very significant omission. We quote therefrom, with the omitted portion in italics:

> * * * The language does not contemplate the withdrawal of station licenses, of power, and of wave lengths from others, and an impounding thereof in the absence of applications from the third or other zones therefor. It does not suggest that the requirement of the law of a showing of public interest, convenience, or necessity as the basis for the grant of a license, or that other provisions of the law are to be waived. *It is intended, however, to require of the licensing authority that as soon as may be and in proper cases licenses in number and in kind shall be granted to applicants from this third zone and other sections of the country sufficient to bring equality in the particulars specified.* If, however, within the entire United States the saturation point is now reached and additional stations or additional power or other wave lengths may not be granted in a particular zone without prejudice to all, then it necessarily follows that there must be worked out a redistribution of the stations and of the power and of wave lengths now authorized. (House Report 800, Feb. 29, 1928.)

The first sentence in the foregoing simply means licenses need not be withdrawn or changed *in the absence of applications* from zones which did not have their share. As a matter of fact, there were not only applications, but a tremendous excess thereof, from the Third and Fifth Zones which were under quota. The last sentence in the foregoing is significant because it shows if the saturation point was already reached, "then it necessarily follows that there must be worked out a redistribution." The saturation point had not only been reached but far surpassed when the Commission first came into existence. There is no dispute anywhere among informed persons on this subject. The Court may see for itself the reasons therefor by considering the scientific facts set forth in Appendix D to this brief and the actual number of stations which the Commission had to deal with. Consequently, in the light of the facts, the Amendment was a specific and immediate command to withdraw facilities from the zones which had more than their share so that other zones, like the Third and Fifth, might have their share.

Respondent makes no charge General Order 40 is not a substantial accomplishment of the equalization required. While the assignments under it are not perfect, they are such that they can be bettered in accordance with an orderly scheme. As between the First and Fifth Zones the equality is

very close to being mathematically precise, particularly with respect to the cleared channels. Not only does each zone have 8 cleared channels, but on those channels each zone has three "limited time" assignments on the cleared channels assigned to the other zone.

Respondent's criticism, when reduced to its simplest terms, is simply that the Commission should have provided 50 cleared channels instead of 40, and in support of this criticism it urges (1) the Engineers' Report of April 11, 1928, and (2) the point of view of one of the five Commissioners. The Commission will show, in the light of the facts, it correctly decided, under the existing circumstances, there should be only 40 cleared channels, and that any excess of this number could not be provided without running counter to just as important a portion of the Engineers' Report as the recommendation with regard to cleared channels.

On respondent's theory the 40 cleared channels should be assigned to 40 stations engaged in full-time operation. By economic use of the engineering possibilities of these channels, however, the Commission has made them accommodate 80 stations, in some cases by division of time and in other cases by making use of differences in standard time between different parts of the country, and the fact that until two stations are linked by darkness interference areas are not usually created. (R. 134, et seq.) This left 554 stations to be disposed of, all of which according to the records and

facts in the Commission's possession seem to be performing a necessary, valuable, or popular service to some part of the country. These stations could be divided into two classes from the point of view of engineering, (1) *regional* stations with power from 250 watts to 100 watts, and (2) *local* stations with power of 100 watts or less. (See Engineers' Report, R. 305–309.)

According to the engineers the amount of duplication on a channel recommended for the first of these two classes was an average of 2½ stations to a channel; for the second class a much larger amount of duplication. The Commission assigned 40 channels for regional stations and has accommodated 292 stations on these channels (an average of over 7 to a channel), employing various devices, such as time division and use of daylight time, to increase the number over the minimum recommended by the engineers. (R. 134, et seq.) While some of these regional channels are consistent with the engineering recommendations as to geographic separation, others are already tremendously overloaded, so that service of existing stations will be practically ruined if other stations are placed on these channels. If any more stations are placed on regional channels, it will be in direct violation of the recommendation in the Engineers' Report.

The Commission assigned six channels to local stations, and on these six channels has accommodated 250 stations of 100 watts or less. (R. 134, et seq.) In some of the zones each of these channels

is already loaded to the point of saturation. None of them is a channel which respondent would willingly accept. No regional stations could be placed on any of these channels without violating the recommendations in the Engineers' Report, and ruining reception from a large number of 100-watt stations.

Six of the total of 96 channels in the broadcast band are, as previously explained, exclusively reserved for Canadian stations. The Commission does not believe respondent will question the international obligation which the United States owes in this respect. This leaves only four of the remaining 90 channels to be accounted for. These channels are near the upper limits of the broadcast band of frequencies (1,460, 1,470, 1,480, and 1,490 kc.) and are devoted to use by a total of twelve 5-kw. stations. They are not involved in this case because respondent must concede it would not under any circumstances take any such assignment.

To get a clear picture of what respondent is really contending for when it argues the Commission should have provided 10 additional cleared channels, the Commission urges that the court examine the present situation with regard to the stations now using the regional and local channels. If the number of cleared channels is to be increased, the number of either regional or local channels must be reduced by 10. The frequencies of the regional channels are set forth in subparagraph C and D of

General Order 40 (R. 102) and of the local stations in subparagraph E (R. 102–103). The Commission then urges the Court to take any one of these regional or local channels and ascertain which stations are now assigned to it as shown by the list set forth in the record (R. 134 et seq.). As an example of a regional channel the Commission points to 950 kc. (R. 141) which is used by four 100-watt stations and two 500-watt stations. One of these stations is WRC at Washington, D. C., with 500 watts. This is the type of station which must either be put out of existence altogether or crowded onto another channel already overloaded, so as to be able to give practically no service. To make the channel a cleared channel, 6 stations must be sacrificed for the sake of 1. Another example is 620 kc. with exactly the same number and kind of stations, one of them WTMJ at Milwaukee, Wis., the only station of any substantial size in the whole state of Wisconsin. Similar examples can be multiplied by examining each regional channel. To show the number of stations that must be discontinued or accommodated elsewhere on local channels we call the Court's attention to 1,200 kc. and 1,210 kc. (R. 145–147.)

When the Engineering Report is carefully examined, it will be seen that while it undoubtedly sets forth sound engineering principles it is based upon service in terms of *area* rather than population. It is true that high power stations on 50 cleared chan-

nels will serve greater *areas* than if 10 of these channels are devoted to regional stations. Obviously, however, the population centers are in the cities and their suburbs. Such centers can be excellently served by stations of 250 to 1,000 watts, which will in many instances even give good service into the surrounding regions. The cleared channels are primarily designed for reaching agricultural populations and remote places not served by local stations. A question such as this is one to be decided by the Commission, not by a voluntary association of engineers.

The Engineers' Report also assumes the Commission can arbitrarily put stations entirely out of existence without regard to the service rendered by them. The Commission held hearings on 164 stations in the summer of 1928 and most of them made showings that convinced the Commission that their continued operation is in the public interest. Where such a showing was not made the Commission discontinued the station. (See *Technical Radio Laboratory, Appellant* v. *Federal Radio Commission,* No. 4835, Court of Appeals, D. C., decided Nov. 4, 1929, U. S. Daily, Nov. 7, 1929.)

The status of the Engineers' Report has been persistently misrepresented. This was not a report by engineers employed at the time by or associated with the Commission. On April 6, 1928, the Commission held a conference with a number of radio engineers to consider the best means of carrying out the equalization amendment. It had previously

submitted the problem to a group of experts, which on March 30, 1928, had submitted a memorandum accompanied by two sample allocations, one calling for 50 cleared channels and the other for 30 cleared channels. (R. 286–303.) At the conference on April 6th the engineers present favored the first of these two. It happens, however, the chairman of this conference later became the chief engineer of the Commission and played an important part in working out of General Order 40, and the allocation thereunder. He approved it at the time it was adopted and has come out publicly many times in support of it.

Engineering recommendations are not, however, the only considerations which must enter into a decision such as that made by the Commission. On April 23, 1928, the Commission held a further hearing to permit the radio industry to express its views on the proper method of applying the equalization amendment.

The National Association of Broadcasters, the Federal Radio Trades Association, and the Radio Manufacturers Association presented plans which in essence recommended no immediate increase of cleared channels and only a gradual increase in the future. (R. 313–329.) The National Electrical Manufacturers Association, through its vice president, made a recommendation calling for 28 cleared channels. (R. 329–333.) Congressman Davis, one of the leading authorities on radio legislation in the House, recommended 25 cleared channels.

(R. 309–313.) There were other miscellaneous proposals which are discussed by Dr. Dellinger in his memorandum. (R. 333–338.) The Commission thus had before it all sorts of conflicting proposals from among which it had to choose. After several months of arduous labor it worked out its own scheme, with the assistance of its own engineers (consisting not only of Dr. Dellinger but radio experts from the Army and Navy and a large proportion of the engineers who had taken part in the conference of April 6th). Commissioner Caldwell from whose letters respondent quoted in the Court of Appeals, voted for General Order 40, voted for the allocation under it, and publicly came out in support of both. The result was General Order 40.

Another very important element in the problem which had to be considered by the Commission and about which it may be presumed to know a great deal more than the engineers, is the need of the country for different *kinds* of broadcasting service.

A station on a cleared channel must restrict its programs to matters of general interest. There is, however, a widespread insistent demand for programs of a regional or of a local interest, such as State or municipal election returns, civic and philanthropic enterprises, local banquets, church services, political campaigns and the like, for which a multiplicity of small stations is necessary. The comparative needs for these types of service are not engineering problems and can not be delegated to

a voluntary group of engineers to decide; they are the very essence of what is in the public interest, convenience or necessity.

It is significant respondent has at no time suggested another allocation which will accommodate the stations which had to be accommodated, if 10 additional cleared channels were to be established. Respondent is, of course, indifferent to the fate of smaller stations, such as WRC in Washington, and is content to attempt to create the impression that all that is necessary to accomplish what it desires is, figuratively, a wave of the hand.

No great assistance will be found in decisions interpreting the phrase "public interest, convenience, or necessity" as applied to railroads, although there are many analogies possible between broadcasting stations and public service corporations. The one element which distinguishes radio communication, however, from other kinds of businesses is the fact that due to physical laws the number who can participate in it is rigidly limited. If, therefore, the population of the entire country is to receive an equitable share of broadcasting service, some parts of the country must be prevented from having an excess of such service. No other interpretation of the phrase "public interest, convenience, or necessity" is possible when applied to broadcasting stations. If broadcasting stations are public utilities, all the citizens of the United States have a claim on a share of this service, and Congress has so

declared in Section 5 of the Amendatory Act. It must be remembered General Order 40 is not the last word in broadcasting assignments. It may be stations will drop out or cease to give satisfactory service to an extent permitting or requiring a different arrangement of channels. It may be the science will make sufficient progress so that stations can operate simultaneously on the same channel to a greater extent than at present. If and when such time arrives, then a new set of regulations will be adopted by the Commission accordingly.

One more circumstance should be mentioned which is expressed more fully in Appendix D. As a part of the plan to avoid interference between stations it was necessary stations on adjacent or nearly adjacent channels be given a fairly wide geographic separation. As to stations located in the same metropolitan area the Commission has attempted to observe a minimum of a separation of 5 channels, and whenever possible an even greater separation. Even in the same zones, particularly in the smaller ones, the Commission has endeavored to preserve a separation of at least two channels. This is necessary primarily because of limitations on receiving sets. To recognize this principle in a scientific allocation it was necessary to redistribute many channels, taking them from one zone for use in another. The result of this and other considerations was that the assignment of 94% of all broad-

casting stations were changed in the new allocation. General Electric Company, which acquired full-time use of two cleared channels for its stations at Denver and Oakland (which stations did not have such assignment prior to November 11, 1928), and the next most favorable kind of assignment for WGY, really benefited tremendously from the new allocation and is now serving an area greater literally by thousands of square miles than it did prior to that time.

At the time the Commission held its first meeting on March 15, 1927, there were 732 broadcasting stations in operation under licenses from the Secretary of Commerce. These stations ranged in power from 5 watts to 50 kw. and were distributed over the entire broadcast band without order or reason. Many stations were on frequencies other than the even multiples of 10. There were no cleared channels anywhere in the entire band. Stations in the same cities, particularly in New York and Chicago, were separated by such narrow margins of frequency as to make it impossible for a large proportion of the listeners located in those cities to get satisfactory service from their own stations. Stations had even located on the Canadian exclusive channels in violation of the informal agreement which had been in force for some time between the Department of Commerce and the Radio Administrator in Canada. Many high-powered stations were located on the Canadian-shared frequencies. In a word,

there was complete chaos and anarchy in the broadcast band.

The events leading up to this state of affairs may be briefly summarized. The first broadcasting station came into existence in the fall of 1920. It was licensed by the Secretary of Commerce under the Radio Act of 1912 on the theory that this Act not only covered broadcast stations but gave authority to the Secretary of Commerce to assign frequencies, power, and hours of operation. Other broadcasting stations rapidly came into existence. At first they were all assigned to the same frequencies, and in 1922 they were assigned to two different frequencies. In February, 1923, the Court of Appeals rendered the first decision construing the Radio Act of 1912 (*Hoover* v. *Intercity Radio Co., Inc.*, 286 Fed. 1003), although its construction was the subject of an opinion by Attorney General Wickersham on November 22, 1912 (29 Op. 579). The Court of Appeals held the Act, properly construed, made it mandatory upon the Secretary of Commerce to grant a license to an applicant and, among other things, said the following:

> In the present case the duty of naming a wave length is mandatory upon the Secretary. The only discretionary act is in selecting a wave length, within the limitations prescribed in the statute, which, in its judgment, will result in the least possible interference. The issuing of a license is not dependent upon the fixing of a wave length.

It is a restriction entering into the license. The wave length named by the Secretary merely measures the extent of the privilege granted to the licensee.

Thereafter broadcasting stations rapidly increased, but the Secretary of Commerce continued to exercise the authority which the court had upheld of assigning frequencies, etc.

By the spring of 1926 there were in existence nearly 600 stations. The situation was described by Secretary of Commerce Hoover at a meeting known as the Fourth National Radio Conference held at Washington in November, 1925, as follows:

> Up to the present time we have had a policy of absolute freedom and untrammeled operation, a field open to all who wished to broadcast for whatever purpose desired. I am convinced that policy was sound. It resulted in a wonderfully extensive development which could have been obtained in no other way. We have to-day 578 stations, and as no more than four of them are under the same management no one can say there is not plenty of competition. To-day every solitary channel in the ether is occupied by at least one broadcasting station and many of them by several. Of the 578 stations 197 are using at least 500 watts of power, and there are now pending before the Department of Commerce over 175 applications for new licenses.
>
> It is simply a physical fact that we have no more channels. It is not possible to furnish

> them under the present state of technical development. It takes no argument to demonstrate that 89 wave lengths (and no more are available) can not be made to serve innumerable stations, no matter how ingenious we may be in arranging time divisions and geographical separations. It is not a question of what we would like to do but what we must do.

In a general way the plan followed by the Secretary of Commerce was to divide all broadcasting stations into two classes, Class A and Class B. Class B stations were assigned frequencies in the lower half of the frequency band (the longer waves) and were given the equivalent of what is now called a clear channel. Class A stations were duplicated in increasing numbers in the other half of the band. As new applications came on it was impossible to accord them substantial privilege without serious detriment to the existing stations.

During the first session of the 69th Congress in 1926 a Bill for the regulation of radio communication (H. R. 9971), which in amended form became the Radio Act of 1927, was reported to the House of Representatives from the Committee on Merchant Marine and Fisheries on March 12, 1926, by Congressman White of Maine, who made the following statement:

> * * * The necessity for radio legislation has in recent years been often called to the attention of your committee by the Department of Commerce; consideration of the

problem and action with respect to it have been urged on the Congress by two Chief Executives. The great listening public and representatives of those directly connected with the radio industry have urged upon us the need for congressional action. The most recent and authoritative utterance by the radio world was given by the Fourth National Radio Conference, held in Washington November, 1925. The conference was attended by about 500, including representatives of the listeners of broadcasting stations, amateurs, manufacturers, engineering societies, Government departments, and many others. It formally expressed the opinion that existing Federal statutes are inadequate to permit proper administration of existing radio activities, and that the public interest required that legislation be enacted. It followed these general recommendations with detailed suggestions. The pending bill is your committee's response to these requests; it is our contribution to the solution of the difficulties which are so generally recognized.

* * * * *

The inadequacy of existing law, the pressing need for legislation, as to which there is complete unanimity of testimony, is attributable to the extraordinary developments in radio which have come within the recent years. Marconi discovered in 1895 a system by which the distance over which electric waves could be transmitted and detected was greatly increased. The application of this

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system to practical purposes came slowly. In 1912 the principal use of radio was for communication between ships and between ships and shore. In this year, 1912, the Marconi Co. of America was organized. It operated at that time 60 shore stations for ship communication, including one capable of transmitting to ships 2,000 miles distant. There were approximately 600 ships upon the seas equipped for radio communication. Transoceanic communication was in its swaddling clothes. There were no other practical uses of radio.

It was in this state of the art that the existing law of 1912 was enacted. Congress did not attempt at that time to regulate or to give power to regulate unknown and nonexistent means or methods of communication. It dealt only with known factors. The legislation was appropriate to that day.

Since 1912 the progress of the art and of the industry has been amazing. Wave lengths unknown then have become of common use. Power undreamed of is to-day projecting electric energy across continents and over seas. There has come the transmission of writing, of pictures, compass reports, beacon signals, radio telephony, and radio broadcasting. Upon the oceans of the world more than 12,000 ships are to-day warned of storm and stress of weather, are given their bearings and directions, send out their calls in time of danger. In the United States alone there are in operation 15,111 amateur stations, 1,901 ship stations, 553

land stations, 536 broadcasting stations. For these broadcasting stations there are now available but 89 different wave lengths, or an average of over six stations to each wave length. The Government's task is to regulate and control a situation of such complexity under a statute framed under the conditions and with the knowledge existing in 1912. It has been held by the Court of Appeals of the District of Columbia that it is mandatory upon the Secretary of Commerce under the Act of 1912 to issue a license to transmit to every applicant. The problem has been, therefore, how to distribute a limited number of wave lengths among an unlimited number of stations. By various expedients, by division of time, by power limitation, by geographical separation, and by other means of doubtful legal authority the department has sought to solve a difficulty which is inherent in the situation if there is a right in everyone who wishes to transmit to do so.

The congestion in the broadcasting field—and it is this means of communication in which the public is chiefly interested—minimizes the value of all stations. There is inequitable geographical distribution of stations, overlapping of areas served, confusion and intolerable interference, and, bad as the situation now is, it threatens to be worse. There are now on file in the department approximately 425 applications. Add those to the 536 now outstanding and we would have a total of 961, or 11 stations for each wave

length. Such a result means the complete breakdown of broadcasting service within the United States. This result is inevitable under existing law. It is universally recognized. Its appreciation is responsible for the widespread interest in radio legislation and for the general hope that Congress will confer the powers necessary to avert the impending calamity.

* * * * *

* * * We have reached the definite conclusion that the right of all our people to enjoy this means of communication can be preserved only by the repudiation of the idea underlying the 1912 law that anyone who will may transmit and by the assertion in its stead of the doctrine that the right of the public to service is superior to the right of any individual to use the ether. This is the first and the most fundamental difference between the pending bill and present law.

The recent radio conference met this issue squarely. It recognized that in the present state of scientific development there must be a limitation upon the number of broadcasting stations, and it recommended that licenses should be issued only to those stations whose operation would render a benefit to the public, are necessary in the public interest, or would contribute to the development of the art. This principle was approved by every witness before your committee. We have written it into the bill. If enacted into law, the broadcasting priv-

ilege will not be a right of selfishness. It will rest upon an assurance of public interest to be served. The same rule is asserted with respect to other forms of transmission.

We have sought in other ways to make more certain a proper regard for public as opposed to private right. Under existing law, there is no limitation upon the right of the Secretary to grant licenses for such time as he approves. He might grant a license for 50, a 100 years, or in perpetuity. In the present bill we definitely challenge and curtail this power.

* * * * *

Existing law gives the Secretary no control over the location of stations. The result has been an unjustifiable grouping of stations within limited areas. There are within 50 miles of Chicago 40 stations, of New York 38, of Philadelphia 22, and of San Francisco 22. Stations so centered detract from the value of each other and interfere with the highest quality of service. In the bill before you the Secretary is given authority in passing upon a license to consider its proposed location and the area to be served thereby, and he is enjoined to effect an equitable geographical distribution of stations over the entire country.

In the spring of 1926, a Chicago station, WJAZ, broadcasted on a frequency and at hours not authorized under its license, it being dissatisfied with the assignment given it by the Secretary of Commerce. This led to a prosecution by the govern-

ment resulting in a decision by Judge Wilkerson at Chicago (reported in *United States* v. *Zenith Radio Corporation et al.*, 12 F. (2d) 614). Judge Wilkerson made a finding for the defendants based chiefly on his opinion that the prosecution had been brought under the wrong section of the statute. He went on, however, to construe the statute as giving power to the Secretary of Commerce to restrict the operation of a station with respect to frequency, power, and hours of operation but intimated that the statute might be void for failure to lay down a test of the standard controlling the Secretary's discretion.

This decision was followed by an opinion from the Attorney General on July 8, 1926. (35 Op. 126.) In this opinion the Act was again construed, but in different fashion from that indicated in Judge Wilkerson's opinion, although the result was the same. The Attorney General held the Secretary of Commerce had no power to restrict the operation of a station with reference to frequency, power, or hours of operation, and that the Secretary had to issue a license to an applicant for the frequency requested. As a result of this opinion, the Department of Commerce, on July 9, 1926, issued a bulletin reciting the fact that the law as construed by the Attorney General did not give it the authority which it thought it had and virtually announced the stations would be free to operate on such frequencies as they chose until further legislation by Congress. There followed the period known as

"the breakdown of the law" in which nearly 200 new broadcasting stations came into existence and a large portion of the older stations "jumped" to other frequencies which they considered more favorable, increased their power, and operated full time instead of part time.

President Coolidge in his message to Congress December 7, 1926, recommended further legislation. His message in part is as follows:

> Due to the decisions of the courts, the authority of the department under the law of 1912 has broken down; many more stations have been operating than can be accommodated within the limited number of wave lengths available; further stations are in course of construction; many stations have departed from the scheme of allocation set down by the department, and the whole service of this most important public function has drifted into such chaos as seems likely, if not remedied, to destroy its great value. I most urgently recommend that this legislation should be speedily enacted.

It was the above-described chaos which the Radio Act of 1927, among other things, designed to do away with, and if one reads the contemporary accounts correctly, the first purpose in creating the Commission at that time was to bring order out of chaos by an orderly arrangement of broadcasting stations. This meant, and was understood by everyone to mean, an elimination as far as possible of the interference which was ruining radio recep-

tion throughout the country by a reduction of the number of stations operating simultaneously, through a division of time, etc., and a scientific assignment of facilities to them so that the maximum possibilities of the broadcast band might be put to use. In a word, the Commission was instructed by Congress to make a new allocation of broadcasting stations for the benefit of the listening public.

General Order 40 is the accomplishment of the task for which the Commission was primarily created.

Respectfully submitted.

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APPENDIX A

[PUBLIC—No. 632—69TH CONGRESS]

[H. R. 9971]

An Act For the regulation of radio communications, and for other purposes

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That this Act is intended to regulate all forms of interstate and foreign radio transmissions and communications within the United States, its Territories and possessions; to naintain the control of the United States over all the channels of interstate and foreign radio transmission; and to provide for the use of such channels, but not the ownership thereof, by individuals, firms, or corporations, for limited periods of time, under licenses granted by Federal authority, and no such license shall be construed to create any right, beyond the terms, conditions, and periods of the license. That no person, firm, company, or corporation shall use or operate any apparatus for the transmission of energy or communications or signals by radio (a) from one place in any Territory or possession of the United States or in the District of Columbia to another place in the same Territory, possession, or District; or (b) from any State, Territory, or possession of the United States, or from the District of Columbia to any other State, Territory, or possession of the United States; or (c) from any place in any State, Territory, or possession of the United States, or in the District of

Columbia, to any place in any foreign country or to any vessel; or (d) within any State when the effects of such use extend beyond the borders of said State, or when interference is caused by such use or operation with the transmission of such energy, communications, or signals from within said State to any place beyond its borders, or from any place beyond its borders to any place within said State, or with the transmission or reception of such energy, communications, or signals from and/or to places beyond the borders of said State; or (e) upon any vessel of the United States; or (f) upon any aircraft or other mobile stations within the United States, except under and in accordance with this Act and with a license in that behalf granted under the provisions of this Act.

SEC. 2. For the purposes of this Act, the United States is divided into five zones, as follows: The first zone shall embrace the States of Maine, New Hampshire, Vermont, Massachusetts, Connecticut, Rhode Island, New York, New Jersey, Delaware, Maryland, the District of Columbia, Porto Rico, and the Virgin Islands; the second zone shall embrace the States of Pennsylvania, Virginia, West Virginia, Ohio, Michigan, and Kentucky; the third zone shall embrace the States of North Carolina, South Carolina, Georgia, Florida, Alabama, Tennessee, Mississippi, Arkansas, Louisiana, Texas, and Oklahoma; the fourth zone shall embrace the States of Indiana, Illinois, Wisconsin, Minnesota, North Dakota, South Dakota, Iowa, Nebraska, Kansas, and Missouri; and the fifth zone shall embrace the States of Montana, Idaho, Wyoming, Colorado, New Mexico, Arizona, Utah, Nevada, Wash-

ington, Oregon, California, the Territory of Hawaii, and Alaska.

SEC. 3. That a commission is hereby created and established to be known as the Federal Radio Commission, hereinafter referred to as the commission, which shall be composed of five commissioners appointed by the President, by and with the advice and consent of the Senate, and one of whom the President shall designate as chairman: *Provided,* That chairmen thereafter elected shall be chosen by the commission itself.

Each member of the commission shall be a citizen of the United States and an actual resident citizen of a State within the zone from which appointed at the time of said appointment. Not more than one commissioner shall be appointed from any zone. No member of the commission shall be financially interested in the manufacture or sale of radio apparatus or in the transmission or operation of radiotelegraphy, radiotelephony, or radio broadcasting. Not more than three commissioners shall be members of the same political party.

The first commissioners shall be appointed for the terms of two, three, four, five, and six years, respectively, from the date of the taking effect of this Act, the term of each to be designated by the President, but their successors shall be appointed for terms of six years, except that any person chosen to fill a vacancy shall be appointed only for the unexpired term of the commissioner whom he shall succeed.

The first meeting of the commission shall be held in the city of Washington at such time and place as the chairman of the commission may fix. The com-

mission shall convene thereafter at such times and places as a majority of the commission may determine, or upon call of the chairman thereof.

The commission may appoint a secretary, and such clerks, special counsel, experts, examiners, and other employees as it may from time to time find necessary for the proper performance of its duties and as from time to time may be appropriated for by Congress.

The commission shall have an official seal and shall annually make a full report of its operations to the Congress.

The members of the commission shall receive a compensation of $10,000 for the first year of their service, said year to date from the first meeting of said commission, and thereafter a compensation of $30 per day for each day's attendance upon sessions of the commission or while engaged upon work of the commission and while traveling to and from such sessions, and also their necessary traveling expenses.

SEC. 4. Except as otherwise provided in this Act, the commission, from time to time, as public convenience, interest, or necessity requires, shall—

(a) Classify radio stations;

(b) Prescribe the nature of the service to be rendered by each class of licensed stations and each station within any class;

(c) Assign bands of frequencies or wave lengths to the various classes of stations, and assign frequencies or wave lengths for each individual station and determine the power which each station shall use and the time during which it may operate;

(d) Determine the location of classes of stations or individual station;

(e) Regulate the kind of apparatus to be used with respect to its external effects and the purity and sharpness of the emissions from each station and from the apparatus therein;

(f) Make such regulations not inconsistent with law as it may deem necessary to prevent interference between stations and to carry out the provisions of this Act: *Provided, however,* That changes in the wave lengths, authorized power, in the character of emitted signals, or in the times of operation of any station, shall not be made without the consent of the station licensee unless, in the judgment of the commission, such changes will promote public convenience or interest or will serve public necessity or the provisions of this Act will be more fully complied with;

(g) Have authority to establish areas or zones to be served by any station;

(h) Have authority to make special regulations applicable to radio stations engaged in chain broadcasting;

(i) Have authority to make general rules and regulations requiring stations to keep such records of programs, transmissions of energy, communications, or signals as it may deem desirable;

(j) Have authority to exclude from the requirements of any regulations in whole or in part any radio station upon railroad rolling stock, or to modify such regulations in its discretion;

(k) Have authority to hold hearings, summon witnesses, administer oaths, compel the production of books, documents, and papers and to make such investigations as may be necessary in the performance of its duties. The commission may make

such expenditures (including expenditures for rent and personal services at the seat of government and elsewhere, for law books, periodicals, and books of reference, and for printing and binding) as may be necessary for the execution of the functions vested in the commission and, as from time to time may be appropriated for by Congress. All expenditures of the commission shall be allowed and paid upon the presentation of itemized vouchers therefor approved by the chairman.

SEC. 5. From and after one year after the first meeting of the commission created by this Act, all the powers and authority vested in the commission under the terms of this Act, except as to the revocation of licenses, shall be vested in and exercised by the Secretary of Commerce; except that thereafter the commission shall have power and jurisdiction to act upon and determine any and all matters brought before it under the terms of this section.

It shall also be the duty of the Secretary of Commerce—

(A) For and during a period of one year from the first meeting of the commission created by this Act, to immediately refer to the commission all applications for station licenses or for the renewal or modification of existing station licenses.

(B) From and after one year from the first meeting of the commission created by this Act, to refer to the commission for its action any application for a station license or for the renewal or modification of any existing station license as to the granting of which dispute, controversy, or conflict arises or against the granting of which protest is

filed within ten days after the date of filing said application by any party in interest and any application as to which such reference is requested by the applicant at the time of filing said application.

(C) To prescribe the qualifications of station operators, to classify them according to the duties to be performed, to fix the forms of such licenses, and to issue them to such persons as he finds qualified.

(D) To suspend the license of any operator for a period not exceeding two years upon proof sufficient to satisfy him that the licensee (a) has violated any provision of any Act or treaty binding on the United States which the Secretary of Commerce or the commission is authorized by this Act to administer or by any regulation made by the commission or the Secretary of Commerce under any such Act or treaty; or (b) has failed to carry out the lawful orders of the master of the vessel on which he is employed; or (c) has wilfully damaged or permitted radio apparatus to be damaged; or (d) has transmitted superfluous radio communications or signals or radio communications containing profane or obscene words or language; or (e) has willfully or maliciously interfered with any other radio communications or signals.

(E) To inspect all transmitting apparatus to ascertain whether in construction and operation it conforms to the requirements of this Act, the rules and regulations of the licensing authority, and the license under which it is constructed or operated.

(F) To report to the commission from time to time any violations of this Act, the rules, regulations, or orders of the commission, or of the terms or conditions of any license.

(G) To designate call letters of all stations.

(H) To cause to be published such call letters and such other announcements and data as in his judgment may be required for the efficient operation of radio stations subject to the jurisdiction of the United States and for the proper enforcement of this Act.

The Secretary may refer to the commission at any time any matter the determination of which is vested in him by the terms of this Act.

Any person, firm, company, or corporation, any State or political division thereof aggrieved or whose interests are adversely affected by any decision, determination, or regulation of the Secretary of Commerce may appeal therefrom to the commission by filing with the Secretary of Commerce notice of such appeal within thirty days after such decision or determination or promulgation of such regulation. All papers, documents, and other records pertaining to such application on file with the Secretary shall thereupon be transferred by him to the commission. The commission shall hear such appeal de novo under such rules and regulations as it may determine.

Decisions by the commission as to matters so appealed and as to all other matters over which it has jurisdiction shall be final, subject to the right of appeal herein given.

No station license shall be granted by the commission or the Secretary of Commerce until the applicant therefor shall have signed a waiver of any claim to the use of any particular frequency or wave length or of the ether as against the regulatory power of the United States because of the

previous use of the same, whether by license or otherwise.

SEC. 6. Radio stations belonging to and operated by the United States shall not be subject to the provisions of sections 1, 4, and 5 of this Act. All such Government stations shall use such frequencies or wave lengths as shall be assigned to each or to each class by the President. All such stations, except stations on board naval and other Government vessels while at sea or beyond the limits of the continental United States, when transmitting any radio communication or signal other than a communication or signal relating to Government business shall conform to such rules and regulations designed to prevent interference with other radio stations and the rights of others as the licensing authority may prescribe. Upon proclamation by the President that there exists war or a threat of war or a state of public peril or disaster, or other national emergency, or in order to preserve the neutrality of the United States, the President may suspend or amend, for such time as he may see fit, the rules and regulations applicable to any or all stations within the jurisdiction of the United States as prescribed by the licensing authority, and may cause the closing of any station for radio communication and the removal therefrom of its apparatus and equipment, or he may authorize the use or control of any such station and/or its apparatus and equipment by any department of the Government under such regulations as he may prescribe, upon just compensation to the owners. Radio stations on board vessels of the United States Shipping Board or the United States

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Shipping Board Emergency Fleet Corporation or the Inland and Coastwise Waterways Service shall be subject to the provisions of this Act.

SEC. 7. The President shall ascertain the just compensation for such use or control and certify the amount ascertained to Congress for appropriation and payment to the person entitled thereto. If the amount so certified is unsatisfactory to the person entitled thereto, such person shall be paid only 75 per centum of the amount and shall be entitled to sue the United States to recover such further sum as added to such payment of 75 per centum which will make such amount as will be just compensation for the use and control. Such suit shall be brought in the manner provided by paragraph 20 of section 24, or by section 145 of the Judicial Code, as amended.

SEC. 8. All stations owned and operated by the United States, except mobile stations of the Army of the United States, and all other stations on land and sea, shall have special call letters designated by the Secretary of Commerce.

Section 1 of this Act shall not apply to any person, firm, company, or corporation sending radio communications or signals on a foregin ship while the same is within the jurisdiction of the United States, but such communications or signals shall be transmitted only in accordance with such regulations designed to prevent interference as may be promulgated under the authority of this Act.

SEC. 9. The licensing authority, if public convenience, interest, or necessity will be served thereby, subject to the limitations of this Act, shall grant to any applicant therefor a station license provided for by this Act.

In considering applications for licenses and renewals of licenses, when and in so far as there is a demand for the same, the licensing authority shall make such a distribution of licenses, bands of frequency of wave lengths, periods of time for operation, and of power among the different States and communities as to give fair, efficient, and equitable radio service to each of the same.

No license granted for the operation of a broadcasting station shall be for a longer term than three years and no license so granted for any other class of station shall be for a longer term than five years, and any license granted may be revoked as hereinafter provided. Upon the expiration of any license, upon application therefor, a renewal of such license may be granted from time to time for a term of not to exceed three years in the case of broadcasting licenses and not to exceed five years in the case of other licenses.

No renewal of an existing station license shall be granted more than thirty days prior to the expiration of the original license.

SEC. 10. The licensing authority may grant station licenses only upon written application therefor addressed to it. All applications shall be filed with the Secretary of Commerce. All such applications shall set forth such facts as the licensing authority by regulation may prescribe as to the citizenship, character, and financial, technical, and other qualifications of the applicant to operate the station; the ownership and location of the proposed station and of the stations, if any, with which it is proposed to communicate; the frequencies or wave lengths and the power desired to be used; the hours of the day

or other periods of time during which it is proposed to operate the station; the purposes for which the station is to be used; and such other information as it may require. The licensing authority at any time after the filing of such original application and during the term of any such license may require from an applicant or licensee further written statements of fact to enable it to determine whether such original application should be granted or denied or such license revoked. Such application and/or such statement of fact shall be signed by the applicant and/or licensee under oath or affirmation.

The licensing authority in granting any license for a station intended or used for commercial communication between the United States or any Territory or possession, continental or insular, subject to the jurisdiction of the United States, and any foreign country, may impose any terms, conditions, or restrictions authorized to be imposed with respect to submarine-cable licenses by section 2 of an Act entitled "An Act relating to the landing and the operation of submarine cables in the United States," approved May 24, 1921.

SEC. 11. If upon examination of any application for a station license or for the renewal or modification of a station license the licensing authority shall determine that public interest, convenience, or necessity would be served by the granting thereof, it shall authorize the issuance, renewal, or modification thereof in accordance with said finding. In the event the licensing authority upon examination of any such application does not reach such decision with respect thereto, it shall notify the applicant thereof, shall fix and give notice of a time and

place for hearing thereon, and shall afford such applicant an opportunity to be heard under such rules and regulations as it may prescribe.

Such station licensee as the licensing authority may grant shall be in such general form as it may prescribe, but each license shall contain, in addition to other provisions, a statement of the following conditions to which such license shall be subject:

(A) The station license shall not vest in the licensee any right to operate the station nor any right in the use of the frequencies or wave length designated in the license beyond the term thereof nor in any other manner than authorized therein.

(B) Neither the license nor the right granted thereunder shall be assigned or otherwise transferred in violation of this Act.

(C) Every license issued under this Act shall be subject in terms to the right of use or control conferred by section 6 hereof.

In cases of emergency arising during the period of one year from and after the first meeting of the commission created hereby, or on applications filed during said time for temporary changes in terms of licenses when the commission is not in session and prompt action is deemed necessary, the Secretary of Commerce shall have authority to exercise the powers and duties of the commission, except as to revocation of licenses, but all such exercise of powers shall be promptly reported to the members of the commission, and any action by the Secretary authorized under this paragraph shall continue in force and have effect only until such time as the commission shall act thereon.

SEC. 12. The station license required hereby shall not be granted to, or after the granting thereof such license shall not be transferred in any manner, either voluntarily or involuntarily, to (a) any alien or the representative of any alien; (b) to any foreign government, or the representative thereof; (c) to any company, corporation, or association organized under the laws of any foreign government; (d) to any company, corporation, or association of which any officer or director is an alien, or of which more than one-fifth of the capital stock may be voted by aliens or their representatives or by a foreign government or representative thereof, or by any company, corporation, or association organized under the laws of a foreign country.

The station license required hereby, the frequencies or wave length or lengths authorized to be used by the licensee, and the rights therein granted shall not be transferred, assigned, or in any manner, either voluntarily or involuntarily, disposed of to any person, firm, company, or corporation without the consent in writing of the licensing authority.

SEC. 13. The licensing authority is hereby directed to refuse a station license and/or the permit hereinafter required for the construction of a station to any person, firm, company, or corporation, or any subsidiary thereof, which has been finally adjudged guilty by a Federal court of unlawfully monopolizing or attempting unlawfully to monopolize, after this Act takes effect, radio communication, directly or indirectly, through the control of the manufacture or sale of radio apparatus, through exclusive traffic arrangements, or by any

other means or to have been using unfair methods of competition. The granting of a license shall not estop the United States or any person aggrieved from proceeding against such person, firm, company, or corporation for violating the law against unfair methods of competition or for a violation of the law against unlawful restraints and monopolies and/or combinations, contracts, or agreements in restraint of trade, or from instituting proceedings for the dissolution of such firm, company, or corporation.

SEC. 14. Any station license shall be revocable by the commission for false statements either in the application or in the statement of fact which may be required by section 10 hereof, or because of conditions revealed by such statements of fact as may be required from time to time which would warrant the licensing authority in refusing to grant a license on an original application, or for failure to operate substantially as set forth in the license, for violation of or failure to observe any of the restrictions and conditions of this Act, or of any regulation of the licensing authority authorized by this Act or by a treaty ratified by the United States, or whenever the Interstate Commerce Commission, or any other Federal body in the exercise of authority conferred upon it by law, shall find and shall certify to the commission that any licensee bound so to do, has failed to provide reasonable facilities for the transmission of radio communications, or that any licensee has made any unjust and unreasonable charge, or has been guilty of any discrimination, either as to charge or as to service or has made or prescribed any unjust and unreasonable classification, regula-

tion, or practice with respect to the transmission of radio communications or service: *Provided,* That no such order of revocation shall take effect until thirty days' notice in writing thereof, stating the cause for the proposed revocation, has been given to the parties known by the commission to be interested in such license. Any person in interest aggrieved by said order may make written application to the commission at any time within said thirty days for a hearing upon such order, and upon the filing of such written application said order of revocation shall stand suspended until the conclusion of the hearing herein directed. Notice in writing of said hearing shall be given by the commission to all the parties known to it to be interested in such license twenty days prior to the time of said hearing. Said hearing shall be conducted under such rules and in such manner as the commission may prescribe. Upon the conclusion hereof the commission may affirm, modify, or revoke said orders of revocation.

SEC. 15. All laws of the United States relating to unlawful restraints and monopolies and to combinations, contracts, or agreements in restraint of trade are hereby declared to be applicable to the manufacture and sale of and to trade in radio apparatus and devices entering into or affecting interstate or foreign commerce and to interstate or foreign radio communications. Whenever in any suit, action, or proceeding, civil or criminal, brought under the provisions of any of said laws or in any proceedings brought to enforce or to review findings and orders of the Federal Trade Commission or other governmental agency in respect of any

matters as to which said commission or other governmental agency is by law authorized to act, any licensee shall be found guilty of the violation of the provisions of such laws or any of them, the court, in addition to the penalties imposed by said laws, may adjudge, order, and/or decree that the license of such licensee shall, as of the date the decree or judgment becomes finally effective or as of such other date as the said decree shall fix, be revoked and that all rights under such license shall thereupon cease: *Provided, however,* That such licensee shall have the same right of appeal or review as is provided by law in respect of other decrees and judgments of said court.

SEC. 16. Any applicant for a construction permit, for a station license, or for the renewal or modification of an existing station license whose application is refused by the licensing authority shall have the right to appeal from said decision to the Court of Appeals of the District of Columbia; and any licensee whose license is revoked by the commission shall have the right to appeal from such decision of revocation to said Court of Appeals of the District of Columbia or to the district court of the United States in which the apparatus licensed is operated, by filing with said court, within twenty days after the decision complained of is effective, notice in writing of said appeal and of the reasons therefor.

The licensing authority from whose decision an appeal is taken shall be notified of said appeal by service upon it, prior to the filing thereof, of a certified copy of said appeal and of the reasons therefor. Within twenty days after the filing of

said appeal the licensing authority shall file with the court the originals or certified copies of all papers and evidence presented to it upon the original application for a permit or license or in the hearing upon said order of revocation, and also a like copy of its decision thereon and a full statement in writing of the facts and the grounds for its decision as found and given by it. Within twenty days after the filing of said statement by the licensing authority either party may give notice to the court of his desire to adduce additional evidence. Said notice shall be in the form of a verified petition stating the nature and character of said additional evidence, and the court may thereupon order such evidence to be taken in such manner and upon such terms and conditions as it may deem proper.

At the earliest convenient time the court shall hear, review, and determine the appeal upon said record and evidence, and may alter or revise the decision appealed from and enter such judgment as to it may seem just. The revision by the court shall be confined to the points set forth in the reasons of appeal.

SEC. 17. After the passage of this Act no person, firm, company, or corporation now or hereafter directly or indirectly through any subsidiary, associated, or affiliated person, firm, company, corporation, or agent, or otherwise, in the business of transmitting and/or receiving for hire energy, communications, or signals by radio in accordance with the terms of the license issued under this Act, shall by purchase, lease, construction, or otherwise, directly or indirectly, acquire, own, control, or operate any cable or wire telegraph or telephone line or system

between any place in any State, Territory, or possession of the United States or in the District of Columbia, and any place in any foreign country, or shall acquire, own, or control any part of the stock or other capital share of any interest in the physical property and/or other assets of any such cable, wire, telegraph, or telephone line or system, if in either case the purpose is and/or the effect thereof may be to substantially lessen competition or to restrain commerce between any place in any State, Territory, or possession of the United States or in the District of Columbia and any place in any foreign country, or unlawfully to create monopoly in any line of commerce; nor shall any person, firm, company, or corporation now or hereafter engaged directly or indirectly through any subsidiary, associated, or affiliated person, company, corporation, or agent, or otherwise, in the business of transmitting and/or receiving for hire messages by any cable, wire, telegraph, or telephone line or system (a) between any place in any State, Territory, or possession of the United States or in the District of Columbia, and any place in any other State, Territory, or possession of the United States; or (b) between any place in any State, Territory, or possession of the United States or the District of Columbia, and any place in any foreign country, by purchase, lease, construction, or otherwise, directly or indirectly acquire, own, control, or operate any station or the apparatus therein, or any system for transmitting and/or receiving radio communications or signals between any place in any State, Territory, or possession of the United States or in the District of

Columbia, and any place in any foreign country, or shall acquire, own, or control any part of the stock or other capital share or any interest in the physical property and/or other assets of any such radio station, apparatus, or system, if in either case the purpose is and/or the effect thereof may be to substantially lessen competition or to restrain commerce between any place in any State, Territory, or possession of the United States or in the District of Columbia, and any place in any foreign country, or unlawfully to create monopoly in any line of commerce.

SEC. 18. If any licensee shall permit any person who is a legally qualified candidate for any public office to use a broadcasting station, he shall afford equal opportunities to all other such candidates for that office in the use of such broadcasting station, and the licensing authority shall make rules and regulations to carry this provision into effect: *Provided,* That such licensee shall have no power of censorship over the material broadcast under the provisions of this paragraph. No obligation is hereby imposed upon any licensee to allow the use of its station by any such candidate.

SEC. 19. All matter broadcast by any radio station for which service, money, or any other valuable consideration is directly or indirectly paid, or promised to or charged or accepted by, the station so broadcasting, from any person, firm, company, or corporation, shall, at the time the same is so broadcast, be announced as paid for or furnished, as the case may be, by such person, firm, company, or corporation.

SEC. 20. The actual operation of all transmitting apparatus in any radio station for which a station

license is required by this Act shall be carried on only by a person holding an operator's license issued hereunder. No person shall operate any such apparatus in such station except under and in accordance with an operator's license issued to him by the Secretary of Commerce.

SEC. 21. No license shall be issued under the authority of this Act for the operation of any station the construction of which is begun or is continued after this Act takes effect, unless a permit for its construction has been granted by the licensing authority upon written application therefor. The licensing authority may grant such permit if public convenience, interest, or necessity will be served by the construction of the station. This application shall set forth such facts as the licensing authority by regulation may prescribe as to the citizenship, character, and the financial, technical, and other ability of the applicant to construct and operate the station, the ownership and location of the proposed station and of the station or stations with which it is proposed to communicate, the frequencies and wave length or wave lengths desired to be used, the hours of the day or other periods of time during which it is proposed to operate the station, the purpose for which the station is to be used, the type of transmitting apparatus to be used, the power to be used, the date upon whcih the station is expected to be completed and in operation, and such other information as the licensing authority may require. Such application shall be signed by the applicant under oath or affirmation.

Such permit for construction shall show specifically the earliest and latest dates between which the actual operation of such station is expected to

begin, and shall provide that said permit will be automatically forfeited if the station is not ready for operation within the time specified or within such further time as the licensing authority may allow, unless prevented by causes not under the control of the grantee. The rights under any such permit shall not be assigned or otherwise transferred to any person, firm, company, or corporation without the approval of the licensing authority. A permit for construction shall not be required for Government stations, amateur stations, or stations upon mobile vessels, railroad rolling stock, or aircraft. Upon the completion of any station for the construction or continued construction for which a permit has been granted, and upon it being made to appear to the licensing authority that all the terms, conditions, and obligations set forth in the application and permit have been fully met, and that no cause or circumstance arising or first coming to the knowledge of the licensing authority since the granting of the permit would, in the judgment of the licensing authority, make the operation of such station against the public interest, the licensing authority shall issue a license to the lawful holder of said permit for the operation of said station. Said license shall conform generally to the terms of said permit.

SEC. 22. The licensing authority is authorized to designate from time to time radio stations the communications or signals of which, in its opinion, are liable to interfere with the transmission or reception of distress signals of ships. Such stations are required to keep a licensed radio operator listening in on the wave lengths designated for signals of

distress and radio communications relating thereto during the entire period the transmitter of such station is in operation.

SEC. 23. Every radio station on shipboard shall be equipped to transmit radio communications or signals of distress on the frequency or wave length specified by the licensing authority, with apparatus capable of transmitting and receiving messages over a distance of at least one hundred miles by day or night. When sending radio communications or signals of distress and radio communications relating thereto the transmitting set may be adjusted in such a manner as to produce a maximum of radiation irrespective of the amount of interference which may thus be caused.

All radio stations, including Government stations and stations on board foreign vessels when within the territorial waters of the United States, shall give absolute priority to radio communications or signals relating to ships in distress; shall cease all sending on frequencies or wave lengths which will interfere with hearing a radio communication or signal of distress, and, except when engaged in answering or aiding the ship in distress, shall refrain from sending any radio communications or signals until there is assurance that no interference will be caused with the radio communications or signals relating thereto, and shall assist the vessel in distress, so far as possible, by complying with its instructions.

SEC. 24. Every shore station open to general public service between the coast and vessels at sea shall be bound to exchange radio communications or signals with any ship station without distinction

as to radio systems or instruments adopted by such stations, respectively, and each station on shipboard shall be bound to exchange radio communications or signals with any other station on shipboard without distinction as to radio systems or instruments adopted by each station.

SEC. 25. At all places where Government and private or commercial radio stations on land operate in such close proximity that interference with the work of Government stations can not be avoided when they are operating simultaneously such private or commercial stations as do interfere with the transmission or reception of radio communications or signals by the Government stations concerned shall not use their transmitters during the first fifteen minutes of each hour, local standard time.

The Government stations for which the abovementioned division of time is established shall transmit radio communications or signals only during the first fifteen minutes of each hour, local standard time, except in case of signals or radio communications relating to vessels in distress and vessel requests for information as to course, location, or compass direction.

SEC. 26. In all circumstances, except in case of radio communications or signals relating to vessels in distress, all radio stations, including those owned and operated by the United States, shall use the minimum amount of power necessary to carry out the communication desired.

SEC. 27. No person receiving or assisting in receiving any radio communication shall divulge or publish the contents, substance, purport, effect, or meaning thereof except through authorized chan-

nels of transmission or reception to any person other than the addressee, his agent, or attorney, or to a telephone, telegraph, cable, or radio station employed or authorized to forward such radio communication to its destination, or to proper accounting or distributing officers of the various communicating centers over which the radio communication may be passed, or to the master of a ship under whom he is serving, or in response to a subpœna issued by a court of competent jurisdiction, or on demand of other lawful authority; and no person not being authorized by the sender shall intercept any message and divulge or publish the contents, substance, purport, effect, or meaning of such intercepted message to any person; and no person not being entitled thereto shall receive or assist in receiving any radio communication and use the same or any information therein contained for his own benefit or for the benefit of another not entitled thereto; and no person having received such intercepted radio communication or having become acquainted with the contents, substance, purport, effect, or meaning of the same or any part thereof, knowing that such information was so obtained shall divulge or publish the contents, substance, purport, effect, or meaning of the same or any part thereof, or use the same or any information therein contained for his own benefit or for the benefit of another not entitled thereto: *Provided,* That this section shall not apply to the receiving, divulging, publishing, or utilizing the contents of any radio communication broadcasted or transmitted by amateurs or others for the use of the general public or relating to ships in distress.

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SEC. 28. No person, firm, company, or corporation within the jurisdiction of the United States shall knowingly utter or transmit, or cause to be uttered or transmitted, any false or fraudulent signal of distress, or communication relating thereto, nor shall any broadcasting station rebroadcast the program or any part thereof of another broadcasting station without the express authority of the originating station.

SEC. 29. Nothing in this Act shall be understood or construed to give the licensing authority the power of censorship over the radio communications or signals transmitted by any radio station, and no regulation or condition shall be promulgated or fixed by the licensing authority which shall interfere with the right of free speech by means of radio communications. No person within the jurisdiction of the United States shall utter any obscene, indecent, or profane language by means of radio communication.

SEC. 30. The Secretary of the Navy is hereby authorized unless restrained by international agreement, under the terms and conditions and at rates prescribed by him, which rates shall be just and reasonable, and which, upon complaint, shall be subject to review and revision by the Interstate Commerce Commission, to use all radio stations and apparatus, wherever located, owned by the United States and under the control of the Navy Department (a) for the reception and transmission of press messages offered by any newspaper published in the United States, its Territories or possessions, or published by citizens of the United States in foreign countries, or by any press association of the United States, and (b) for the recep-

tion and transmission of private commercial messages between ships, between ship and shore, between localities in Alaska and between Alaska and the continental United States: *Provided,* That the rates fixed for the reception and transmission of all such messages, other than press messages between the Pacific coast of the United States, Hawaii, Alaska, the Philippine Islands, and the Orient, and between the United States and the Virgin Islands, shall not be less than the rates charged by privately owned and operated stations for like messages and service: *Provided further,* That the right to use such stations for any of the purposes named in this section shall terminate and cease as between any countries or localities or between any locality and privately operated ships whenever privately owned and operated stations are capable of meeting the normal communication requirements between such countries or localities or between any locality and privately operated ships, and the licensing authority shall have notified the Secretary of the Navy thereof.

SEC. 31. The expression "radio communication" or "radio communications" wherever used in this Act means any intelligence, message, signal, power, pictures, or communication of any nature transferred by electrical energy from one point to another without the aid of any wire connecting the points from and at which the electrical energy is sent or received and any system by means of which such transfer of energy is effected.

SEC. 32. Any person, firm, company, or corporation failing or refusing to observe or violating any rule, regulation, restriction, or condition made or

imposed by the licensing authority under the authority of this Act or of any international radio convention or treaty ratified or adhered to by the United States, in addition to any other penalties provided by law, upon conviction thereof by a court of competent jurisdiction, shall be punished by a fine of not more than $500 for each and every offense.

SEC. 33. Any person, firm, company, or corporation who shall violate any provision of this Act, or shall knowingly make any false oath or affirmation in any affidavit required or authorized by this Act, or shall knowingly swear falsely to a material matter in any hearing authorized by this Act, upon conviction thereof in any court of competent jurisdiction shall be punished by a fine of not more than $5,000 or by imprisonment for a term of not more than five years or both for each and every such offense.

SEC. 34. The trial of any offense under this Act shall be in the district in which it is committed; or if the offense is committed upon the high seas, or out of the jurisdiction of any particular State or district, the trial shall be in the district where the offender may be found or into which he shall be first brought.

SEC. 35. This Act shall not apply to the Philippine Islands or to the Canal Zone. In international radio matters the Philippine Islands and the Canal Zone shall be represented by the Secretary of State.

SEC. 36. The licensing authority is authorized to designate any officer or employee of any other department of the Government on duty in any Territory or possession of the United States other than

the Philippine Islands and the Canal Zone, to render therein such services in connection with the administration of the radio laws of the United States as such authority may prescribe: *Provided*, That such designation shall be approved by the head of the department in which such person is employed.

SEC. 37. The unexpended balance of the moneys appropriated in the item for "wireless communication laws," under the caption "Bureau of Navigation" in Title III of the Act entitled "An Act making appropriations for the Departments of State and Justice and for the judiciary, and for the Departments of Commerce and Labor, for the fiscal year ending June 30, 1927, and for other purposes," approved April 29, 1926, and the appropriation for the same purposes for the fiscal year ending June 30, 1928, shall be available both for expenditures incurred in the administration of this Act and for expenditures for the purposes specified in such items. There is hereby authorized to be appropriated for each fiscal year such sums as may be necessary for the administration of this Act and for the purposes specified in such item.

SEC. 38. If any provision of this Act or the application thereof to any person, firm, company, or corporation, or to any circumstances, is held invalid, the remainder of the Act and the application of such provision to other persons, firms, companies, or corporations, or to other circumstances, shall not be affected thereby.

SEC. 39. The Act entitled "An Act to regulate radio communication," approved August 13, 1912, the joint resolution to authorize the operation of Government-owned radio stations for the general

public, and for other purposes, approved June 5, 1920, as amended, and the joint resolution entitled "Joint resolution limiting the time for which licenses for radio transmission may be granted, and for other purposes," approved December 8, 1926, are hereby repealed.

Such repeal, however, shall not affect any act done or any right accrued or any suit or proceeding had or commenced in any civil cause prior to said repeal, but all liabilities under said laws shall continue and may be enforced in the same manner as if committed; and all penalties, forfeitures, or liabilities incurred prior to taking effect hereof, under any law embraced in, changed, modified, or repealed by this Act, may be prosecuted and punished in the same manner and with the same effect as if this Act had not been passed.

Nothing in this section shall be construed as authorizing any person now using or operating any apparatus for the transmission of radio energy or radio communications or signals to continue such use except under and in accordance with this Act and with a license granted in accordance with the authority hereinbefore conferred.

SEC. 40. This Act shall take effect and be in force upon its passage and approval, except that for and during a period of sixty days after such approval no holder of a license or an extension thereof issued by the Secretary of Commerce under said Act of August 13, 1912, shall be subject to the penalties provided herein for operating a station without the license herein required.

SEC. 41. This Act may be referred to and cited as the Radio Act of 1927.

Approved, February 23, 1927.

APPENDIX B

[PUBLIC—No. 195—70TH CONGRESS]

[S. 2317]

An Act Continuing for one year the powers and authority of the Federal Radio Commission under the Radio Act of 1927, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That all the powers and authority vested in the Federal Radio Commission by the Radio Act of 1927, approved February 23, 1927, shall continue to be vested in and exercised by the commission until March 16, 1929; and wherever any reference is made in such Act to the period of one year after the first meeting of the commission, such reference shall be held to mean the period of two years after the first meeting of the commission.

SEC. 2. The period during which the members of the commission shall receive compensation at the rate of $10,000 per annum is hereby extended until March 16, 1929.

SEC. 3. Prior to January 1, 1930, the licensing authority shall grant no license or renewal of license under the Radio Act of 1927 for a broadcasting station for a period to exceed three months and no license or renewal of license for any other class of station for a period to exceed one year.

SEC. 4. The term of office of each member of the commission shall expire on February 23, 1929, and thereafter commissioners shall be appointed for terms of two, three, four, five, and six years, respectively, as provided in the Radio Act of 1927.

SEC. 5. The second paragraph of section 9 of the Radio Act of 1927 is amended to read as follows:

"It is hereby declared that the people of all the zones established by section 2 of this Act are entitled to equality of radio broadcasting service, both of transmission and of reception, and in order to provide said equality the licensing authority shall as nearly as possible make and maintain an equal allocation of broadcasting licenses, of bands of frequency or wave lengths, of periods of time for operation, and of station power, to each of said zones when and in so far as there are applications therefor; and shall make a fair and equitable allocation of licenses, wave lengths, time for operation, and station power to each of the States, the District of Columbia, the Territories and possessions of the United States within each zone, according to population. The licensing authority shall carry into effect the equality of broadcasting service hereinbefore directed, whenever necessary or proper, by granting or refusing licenses or renewals of licenses, by changing periods of time for operation, and by increasing or decreasing station power, when applications are made for licenses or renewals of licenses: *Provided,* That if and when there is a lack of applications from any zone for the proportionate share of licenses, wave lengths, time of operation, or station power to which such zone is entitled, the licensing authority may issue licenses for the balance of the proportion not applied for from any zone, to applicants from other zones for a temporary period of ninety days each, and shall specifically designate that said apportionment is only for said temporary period. Allocations shall

be charged to the State, District, Territory, or possession wherein the studio of the station is located and not where the transmitter is located."

Approved, March 28, 1928.

APPENDIX C

[PUBLIC—No. 1029—70TH CONGRESS]

[H. R. 15430]

An Act Continuing the powers and authority of the Federal Radio Commission under the Radio Act of 1927, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That all the powers and authority vested in the Federal Radio Commission by the Radio Act of 1927, approved February 23, 1927, shall continue to be vested in and exercised by the commission until December 31, 1929; and wherever any reference is made in such Act to the period of one year after the first meeting of the commission, such reference shall be held to mean the period until December 31, 1929.

SEC. 2. The period during which the members of the commission shall receive compensation at the rate of $10,000 per annum is hereby extended until March 16, 1930.

SEC. 3. Prior to January 1, 1931, the licensing authority shall grant no license or renewal of license under the Radio Act of 1927 for a broadcasting station for a period to exceed three months and no license or renewal of license for any other class of station for a period to exceed one year.

SEC. 4. The term of office of each member of the commission shall expire on February 23, 1930, and thereafter commissioners shall be appointed for terms of two, three, four, five, and six years, respectively, as provided in the Radio Act of 1927.

SEC. 5. The commission is authorized to appoint a general counsel and pay him a salary of $10,000 per annum and not to exceed three assistants to such general counsel, at salaries of $7,500 each per annum. It may appoint such other legal assistants as it may from time to time find necessary for the proper performance of its duties and as from time to time may be appropriated for by Congress.

Approved, March 4, 1929.

APPENDIX D

SCIENTIFIC FACTS AND PRINCIPLES ON WHICH GENERAL ORDER 40 IS BASED

(See Transcript of Record, pp. 343-363)

The broadcast band.—A certain amount of "space" in the ether has, both by International treaty and by regulations of the Commission, been set aside for practically exclusive use by broadcasting stations. It is known as the "broadcast band." Its present dimensions are sanctified by long usage and are now fixed by economic necessity. There is "space" in the ether above and below the broadcast band but such space is filled to the point of congestion with the many other kinds of radio communication, including that carried on by ship stations, aircraft stations, amateurs, experimental stations, transoceanic wireless stations, experimental television stations and many others. Because of the

needs of these other services and for reasons having to do with the construction of receiving sets, it is not to be expected that the broadcast band will be extended to cover a greater space, and respondent does not contend that it should be. To use scientific terms of measurement hereinafter explained, the broadcast band extends from 550 kc. (kilocycles) to 1,500 kc.

The bands on either side of the broadcast band are known as (a) the low-frequency (or long-wave) band extending from 10 kc. to 550 kc. and (b) the high-frequency (or short-wave) band extending from 1,500 to 65,000 kc.

Channels.—It is commonly stated that there are 96 channels in the broadcast band. Inaccurately, and only for convenience, these channels may be pictured as 96 parallel "highways" along which separate radio communications may travel without colliding or interfering with each other. That there are only 96 such "highways" and that the number can not be increased without widening the broadcast band is generally agreed and will not be controverted by respondent. Six of the 96 channels have, by "gentleman's agreement" been reserved exclusively for use by Canadian stations. Of the 90 remaining 11 may be used simultaneously by stations in both Canada and the United States, with severe limitations on the amount of power used by any such station. To designate particular channels and distinguish them one from another, it is necessary again to make use of the scientific terms of measurement used by radio engineers, and which are hereinafter explained. The channels are separated from each other by 10 kc. The lowest channel

in the broadcast band is 550 kc., the next lowest is 560 kc., the next lowest is 570 kc., and so on in units of ten up to and including 1,500 kc., a total of 96. The channel in question in the present case is 790 kc.

Frequency and wave length.—To make clear the meaning of the term "frequency" it will be of assistance to state briefly what occurs when a broadcasting station transmits its program.

The ether.—The ether is an hypothetical medium. There is no satisfactory definition of it. It is not even known to exist and represents nothing more at present than a conception which the human mind finds necessary in order to explain certain electrical phenomena. If it does exist it is apparently existent everywhere, in a vacuum as well as in space occupied by matter, whether gaseous, liquid, or solid. It is continuous in nature and not capable of being bounded, divided into parts, isolated, segregated by geographical boundary lines, or appropriated or reduced to possession by mankind.

Electromagnetic waves and their designation by frequency or wave length.—A radio-communication system may be likened to a telephone system in discussing its component parts. Broadcasting, of course, involves only one-way communication. Wireless telegraphy and wireless telephony involve two-way communication, just as do wire telegraphy and wire telephony.

The three component parts are the sending apparatus, the medium through which the message is sent, and the receiving apparatus. In radio communication the ether is the medium corresponding to the wire and it is through or by means of the

ether that messages radiated from the transmitter are borne in the form of electrical impulses to the receiving set.

The electrical impulses are launched into the ether from wires stretched between the high towers which are a familiar sight above broadcasting stations (i. e., the sending antenna). By means of a very complicated apparatus an alternating electric current is made to run back and forth on these wires. The electric-light current used for ordinary lighting purposes in the home is one which performs 60 complete alternations a second; a complete alternation (back and forth) is termed a "cycle" and the current is therefore described as a 60-cycle current. The current which causes radio waves suitable for practical use alternates at rates from as low as 10,000 cycles a second to as high as 65,000,000 cycles a second. For convenience the term "kilocycles" is used, a kilocycle being 1,000 cycles, just as a kilometer is 1,000 meters. The range of radio waves is, therefore, for practical purposes considered as extending from 10 kc. to 65,000 kc., although as a matter of fact waves above 23,000 kc. are still in the laboratory or experimental stage of development for practical use. The rate of alternation of a wave is called its "frequency," usually expressed in terms of kilocycles.

We know that as a result of producing these tremendously rapidly alternating currents in the sending antenna the same kind of alternating currents (although much weaker in term of electrical measurement units) will be created in a receiving antenna at great distances. This is done in the incredibly short period corresponding to a speed of

approximately 186,000 miles, or 300,000 kilometers, a second, the same speed with which light waves travel. In fact, radio waves are believed to be of the same nature as light waves, the latter having simply much higher frequencies.

The human mind refuses to believe that when a certain kind of disturbance occurs at Point A and a corresponding kind of disturbance always follows at Point B, the two are not related by a chain of cause and effect. To make this chain intelligible the human mind finds it necessary to picture the phenomenon in terms of matter and of motion. Because of external manifestations the motion is thought of as "waves," usually called electromagnetic, or Hertzian, waves. The matter in which the waves progress from one point to another in their rapid flight is the hypothetical medium called the "ether."

Since the disturbances radiating from a sending antenna at any given rate of alternation or frequency—e. g. 1,000 kc.—travel to a point 300,000 kilometers distant in one second, the mind imagines a continuous series of identical waves having crests each 300 meters apart. This is the "wave length" of any particular radio wave. The formula is very simple:

$$300{,}000 = \text{wave length (in meters)} \times \text{frequency (in kilocycles)}$$

Wave-lengths, however, are as clumsy a way of designating radio waves as rods, acres, pounds, pecks, and similar units of measurement, as compared to the decimal system employed by scientists.

Modulation.—If nothing but a continuous series of radio waves were sent out by a station nothing would be heard from the receiving set. The rapid alternations would be picked up by the receiving antenna in the form of an alternating electric-current having the same frequency as is produced in the sending antenna, but it would not be translated into sound or music. It is called the "carrier wave."

A program is impressed on the carrier wave by a process known as "modulation." The carrier wave is made to vary in exact correspondence to the sound vibrations which are communicated into the microphone in the studio of the broadcasting station. The rate of sound vibrations which can be detected by the human ear varies from about 16 cycles (sound waves) a second to about 15,000 cycles a second. The range of the piano keyboard is from about 27 cycles a second to about 4,100 cycles a second. For practical purposes it is assumed in broadcasting that sounds as high as 5,000 cycles a second should be provided for.

The result of impressing a sound having a given rate of vibration—e. g., 1,000 cycles a second—on a carrier wave is to create three waves. Take, for example, the channel which is in question in this case, i. e., 790 kc. If the 1,000-cycle sound is impressed on it and so long as that sound continues, *three* radio waves are transmitted into the ether—the carrier wave of 790 kc., one wave of 791 kc. (790 kc.+1,000 cycles), and one wave of 789 kc. (790 kc.−1,000 cycles). The two latter waves are referred to as the "side bands." It will readily be seen that for the transmission of 5,000-cycle notes a band from 785 kc. to 795 kc. is necessary, and that

for the ideal transmission and reproduction of all sounds detectable by the human ear a band from 775 kc. to 805 kc. would be necessary. Of course, the average program—e. g., an orchestra—covers a wide and complex range of sounds (including the harmonics of notes which are the chief means of distinguisning one musical instrument from another), so that the side bands are in reality made up of a very complicated band of waves over the band of 10 kc. The reason for the channels being at least 10 kc. apart in the broadcast band is thus apparent.

The foregoing has reference only to *sound* modulation. Television, which is still in an experimental stage, may require bands 100 kc. wide or even more. If the broadcast band were used for television there would be room for only 9½ channels between 550 kc. and 1,500 kc., where there are now 96 channels for broadcasting.

Interference.—Manifestly, in view of the foregoing, the term "channel" has no arbitrary meaning. There are no actual highways laid out in the ether. The ether being presumably a continuous medium, all waves radiated into it are causing simultaneous disturbances in it. To permit the transmission and reception of more than one communication at any one time in the ether, it is necessary that the waves used differ sufficiently in frequency so that, among other things, a receiving set can select between them. By certain "tuning devices" (controlled by the dials on a receiving set) one wave can be detected and others excluded. This can not be done if two waves picked up by the receiving antenna are so close to being identical in frequency that the tuning device can not select be-

tween them. Furthermore, the receiving set must not be so selective as to cut off any portion of the side bands which carry the program. The more selective it is made, the more it will cut off the higher notes and the more it will be lacking in what is known as "fidelity" of reproduction. A graphic illustration of three types of receiver is contained in the record (p. 361)—(1) the ideal receiver (which does not exist), which will receive a band of 10 kc. equally well and exclude all others; (2) an ultra-selective receiver which will exclude other waves but will also cut off high notes within the band of 10 kc., and (3) a type which, while more broadly tuned than the better sets now in use, illustrates the actual action of most receivers. It will be seen from the diagram that the latter type will receive communications coming in on adjacent or near-by channels, although not as strongly as communications coming in on the channel to which it is tuned. This is the cause of most "cross talk"—i. e., the reception of two programs simultaneously.

There are several types of interference which must be avoided if we are to have good reception of programs from broadcasting stations—(1) heterodyne, (2) cross talk, (3) blanketing, and (4) harmonic.

Heterodyne interference.—Heterodyne interference manifests itself in the form of a steady, or nearly steady, note varying from a low growl to a high whistle. It results from reception by the receiving set of two carrier waves having frequencies which are too close together. Two such waves will produce a note which has a pitch corresponding exactly to the separation between them in cycles.

If they are 1 kc. (1,000 cycles) apart, they produce a 1,000-cycle note.

Heterodyne interference generally results from interaction, in the receiver, of the carrier waves from two broadcasting stations assigned to, and supposed to be operating on, the same channel. In the present state of the art it is impossible for existing broadcasting stations to adhere closely enough to the same exact frequency to avoid producing a heterodyne unless they are of low power and are separated by great geographical distances. WGY, operating on 790 kc. with 50,000 watts at Schenectady, N. Y., and KGO, operating on the same channel with 10,000 watts at Oakland, Cal., will necessarily cause a heterodyne whistle on that channel over the entire country except a small area around each station. This is true only while the two stations are linked by darkness—i. e., from sunset at Oakland, Cal., to sunrise at Schenectady, N. Y. During the daytime radio waves travel to greatly reduced distances, being absorbed more readily by sunlight. If two such stations operate simultaneously after they are linked by darkness a great portion of the country is deprived of satisfactory, interference-free reception on that channel, and the channel loses all the advantages presented by a cleared channel. In this case 790 kc. is one of the 8 cleared channels set aside for the benefit of listeners in the Fifth Zone, and they are the chief losers if it ceases to be clear, since the First Zone has its 8 cleared channels. The people in the immediate vicinity of Oakland will continue to get satisfactory reception from KGO, but the rural outlying regions of California, Nevada, and elsewhere will get programs ruined by a heterodyne whistle.

The necessity for, and virtue of, cleared channels is recognized by respondent.

In parts of the country, on evenings when reception is good, the programs of both stations will be received, as well as the whistle, with the added annoyance of crosstalk.

Service and nuisance areas of broadcasting stations.—Every broadcasting station has what is properly called a "service area" and a "nuisance area." The carrier wave travels far beyond the area in which the station can give good service to listeners, into areas where it is still sufficiently strong to cause very objectionable heterodyne interference with the broadcasting of other stations. Conditions vary from locality to locality, from season to season, from day to night, and even from hour to hour, so that the service area and the nuisance area of a particular station can be defined only with approximate accuracy. Furthermore, standards vary as to what constitutes good service and what constitutes objectionable interference. The following, however, represents a satisfactory definition of the different types of areas with approximate accuracy under average conditions during evening hours:

Power of station	Radius of area of very good service (city dweller)	Radius of area of good service (suburban dweller)	Radius of area of fair service (rural listener)	Radius of nuisance area
	Miles	*Miles*	*Miles*	
50 watts	2	10	100	300 miles.
100 watts	3	15	150	450 miles.
500 watts	6	30	300	900 miles.
1,000 watts	9	45	450	1,350 miles.
5,000 watts	20	100	1,000	3,000 miles.
50,000 watts	60	300	3,000	Beyond limits of country.

At times when conditions are better than the average for radio reception the areas above indicated will be greatly extended under each heading. As is apparent from the foregoing, any station using power of 5,000 watts makes it impossible for any other station to operate satisfactorily on the same channel anywhere in the United States. The result of such simultaneous operation is greatly to restrict the areas within which satisfactory reception can be had from any other stations, and listeners in a large number of states are cut off from receiving the communications of broadcasting stations located in states other than the one in which they live.

Interference by cross talk.—As has already been explained, cross talk (unless proceeding from two stations on the *same* channel) is usually due to the limitations of receiving sets. The interference is due to the fact that receivers are not so constructed as to receive the programs from one station on a particular channel and exclude the programs of a station broadcasting on a closely adjacent channel if the signal coming from the latter station is substantially in proportion to that of the former.

The danger of cross talk necessitates a very careful geographical location of stations. Stations of substantial power should not be located on adjacent channels if they are located in the vicinity of each other. A disproportion of power must be avoided in the case of stations on channels that are adjacent to each other. For example, where it might be all right (although not ideal) for a 50,000-watt station in New York to be on a channel adjacent to that accupied by 50,000 watts in Chicago, if

one of these stations were a 500-watt station the results might be cross talk in parts of the region properly served by the 500-watt station.

The foregoing illustrates the complicated considerations that must enter into an allocation of broadcasting stations. When, for example, the 40 cleared channels were assigned among the five Zones, the Commission was very careful to see that the channels assigned to any one Zone were spaced as widely apart from each other in frequency as possible, and that, so far as possible, channels assigned to adjacent Zones were similarly spaced. (See subparagraph A, General Order 40, R. 101–102.) 790 kc. was not assigned to the Fifth Zone without careful thought as to what Zones would enjoy the channels on either side of it.

Interference by blanketing.—"Blanketing" is, generally speaking, the result of the same phenomenon as "cross talk." Because of limitations on receiving sets, a station on an adjacent channel which the listener does *not* want to hear may be received with so strong an electrical strength as to "drown out" the station on the channel to which the listener has tuned his receiving set.

Stations located in thickly inhabited communities may not, as a rule, enjoy high power. In the areas of several miles immediately surrounding the station it gives a very strong signal, so strong as to come in over a much wider portion of the dial on a receiving set than is consistent with receiving other stations. Even a 500-watt station creates a tremendously strong signal in its vicinity. An example of this is given by the diagram set forth in the record (p. 363), showing the comparative signals given by

a 500-watt station located in the heart of Chicago as compared with that given by a 25,000-watt station 30 miles away. At a distance of 3 miles from the 500-watt station its signal is shown to be 2½ times as strong as that of the 25,000-watt station, and within a few blocks of the 500-watt station, the latter's signal is 300 times as strong. Consequently, when it comes to duplicating high-powered stations on the same channel, a difficult dilemma is created. If the high-powered station is permitted to remain in the center of the city, it may serve that city reasonably well, even though other stations are on the same channel, and although it fails to each rural areas because of heterodyne interference. On the other hand, it will cause such blanketing as to make it impossible for people in the vicinity of the station to get other stations. If the station is required to move a sufficient distance away from the city, then the very region which it most desires to serve, namely, the city itself, will be invaded by heterodyne interference. Consequently, it is in a general way feasible to provide for the simultaneous operation of stations on the same channel only when each station is of comparatively low power. This is the basis for the so-called regional and local channels. In theory, and generally, in practice, these channels are occupied by stations having transmitters located in the cities they desire to serve, and power restrictions have been placed upon them by the Commission, as has already been explained. While such stations do not have a wide range of service in terms of *area*, they do have such a range in terms of *population*, because of the concentration of population in the vicinity of the transmitter.

Interference by harmonics.—Because a station using one frequency will to some extent cause interference with stations using frequencies which are multiples of the first frequency, the Commission has had again to exercise extreme care in determining the geographical location of stations. A station should not be allowed to operate on 1,240 kc., for example, if another serving the same area is operating on 620 kc.

Synchronization.—It is the hope of radio engineers that the time will come, perhaps at an early date, when heterodyne interference may be avoided by so operating stations with a common control as to enable them to use exactly the same frequency. This will eliminate heterodyne but not cross-talk interference; if the two stations are sending out exactly the same program the element of cross talk may not be important. On the other hand, it may prove that other evils will result from synchronization now impossible to foresee—e. g., the rapid fading out, blotting out, or "fluttering" resulting from the two series of waves being "out of phase." It can not be said as yet that synchronization (at least, over any but very short distances) has been demonstrated as either certain of success or economically practicable. If it succeeds, it will be possible for WGY and KGO to operate simultaneously on the same channel, at least so long as they are radiating identical programs.

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